General Purpose Components

Overview

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- Precision (P-16)
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- Switches (P-62)
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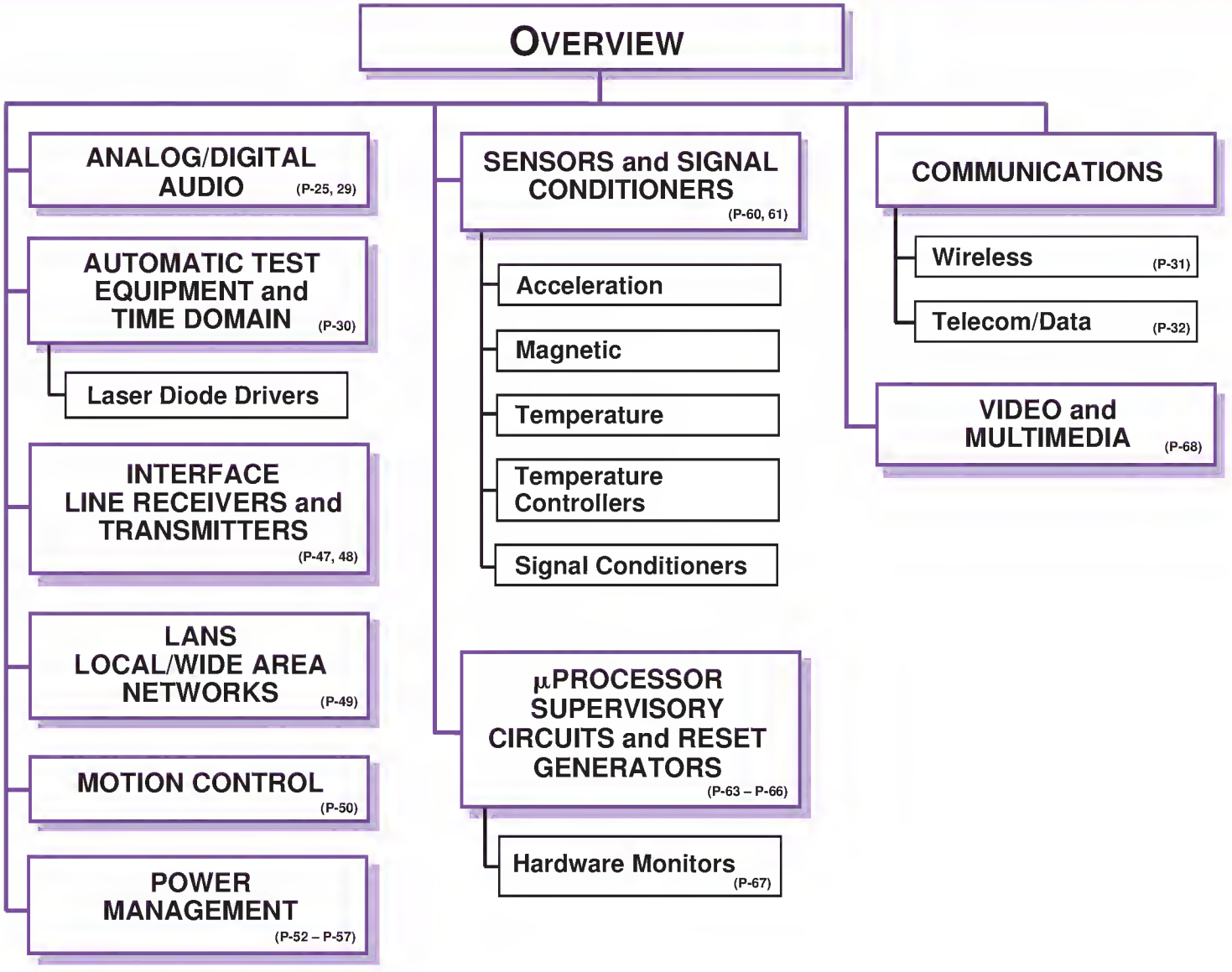
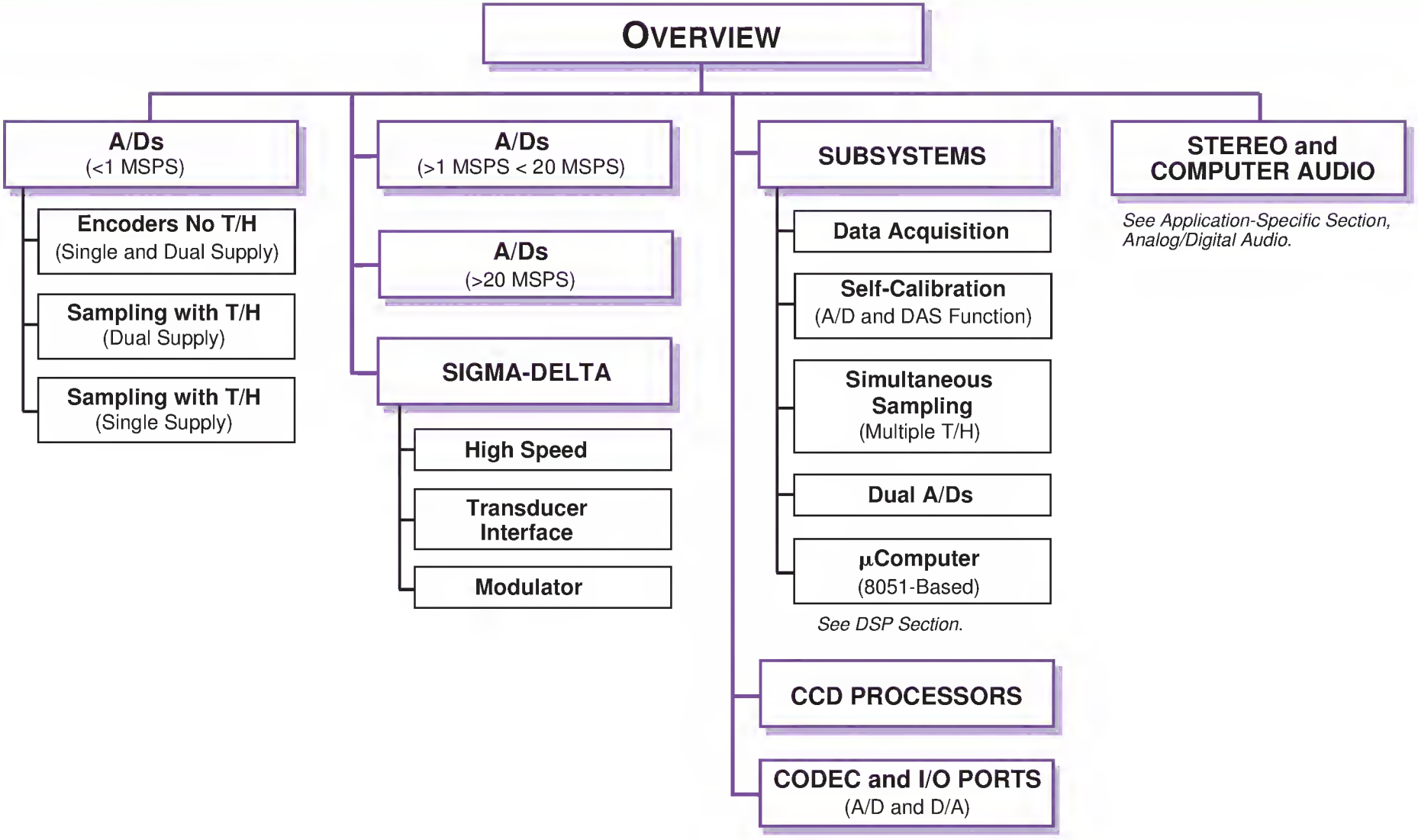
- Chip Sets and Reference Designs (P-46)

TxDAC is a Registered Trademark of Analog Devices, Inc.

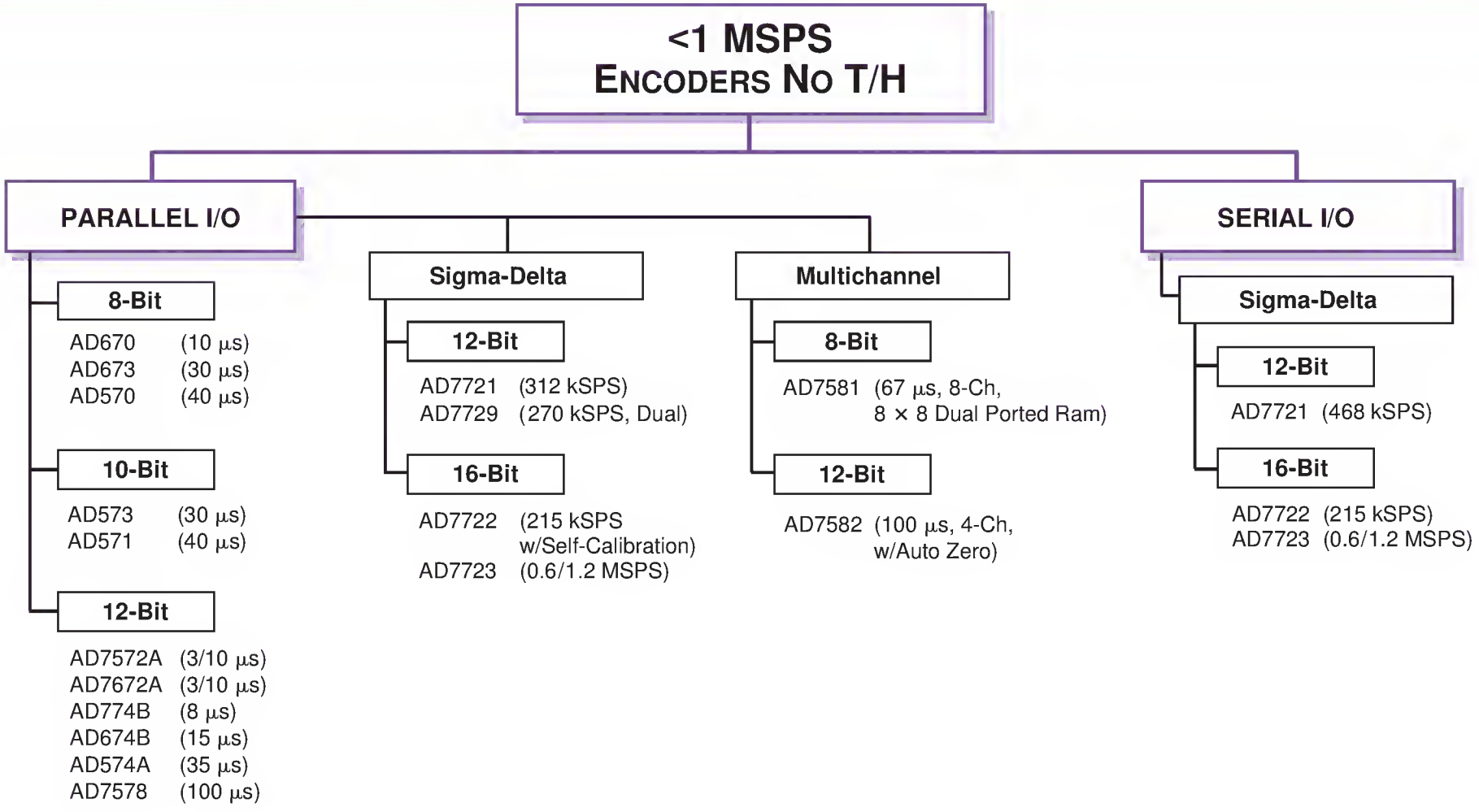
Application Specific Circuits

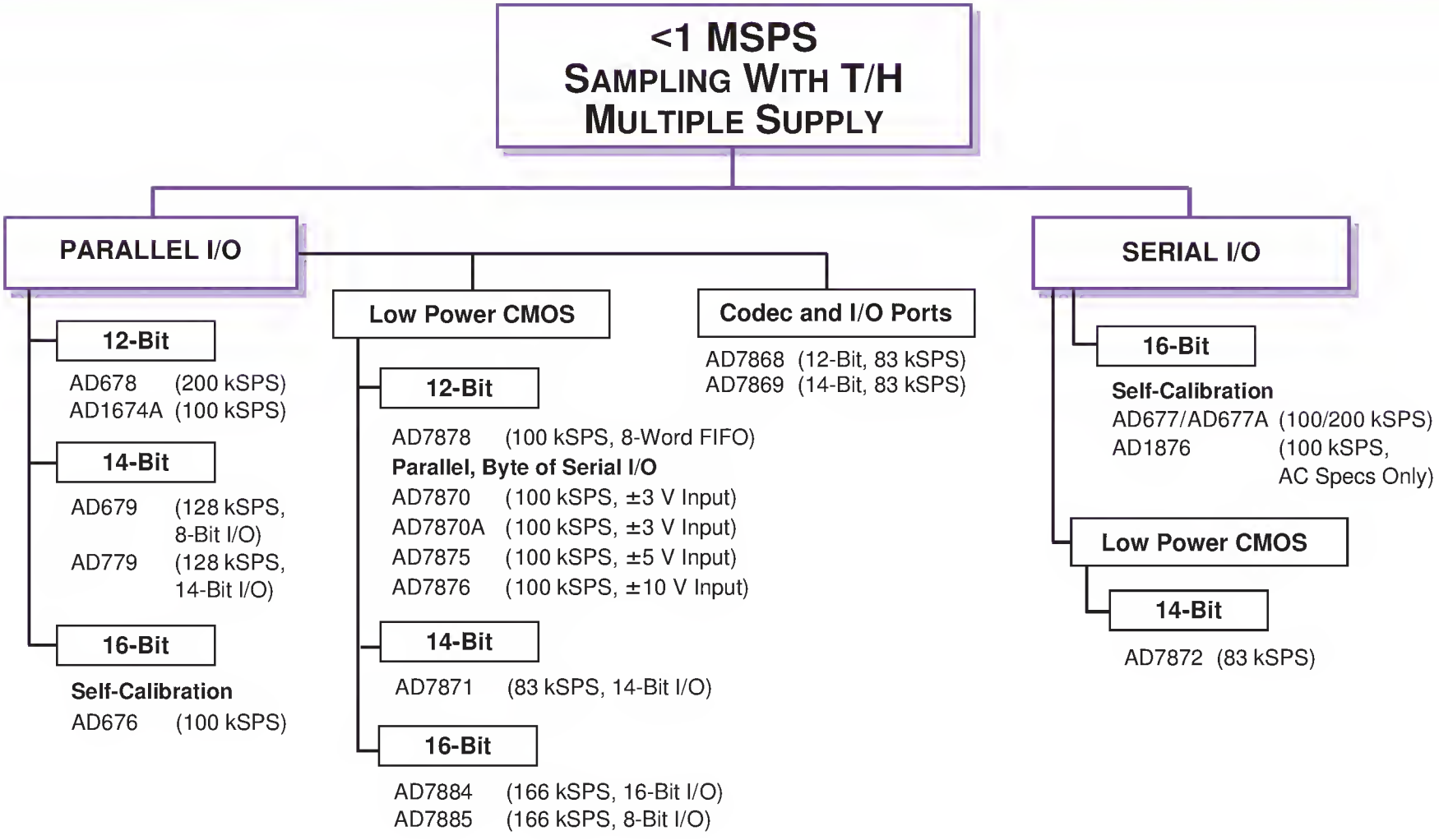


A/D Converters



A/D Converters




<1 MSPS
SAMPLING WITH T/H
MULTIPLE SUPPLY
PARALLEL I/O
12-Bit
AD678 (200 kSPS)
AD1674A (100 kSPS)
14-Bit
AD679 (128 kSPS, 8-Bit I/O)
AD779 (128 kSPS, 14-Bit I/O)
16-Bit
Self-Calibration
AD676 (100 kSPS)
Low Power CMOS
12-Bit
AD7878 (100 kSPS, 8-Word FIFO)
Parallel, Byte of Serial I/O
AD7870 (100 kSPS, ±3 V Input)
AD7870A (100 kSPS, ±3 V Input)
AD7875 (100 kSPS, ±5 V Input)
AD7876 (100 kSPS, ±10 V Input)
14-Bit
AD7871 (83 kSPS, 14-Bit I/O)
16-Bit
AD7884 (166 kSPS, 16-Bit I/O)
AD7885 (166 kSPS, 8-Bit I/O)
Codec and I/O Ports
AD7868 (12-Bit, 83 kSPS)
AD7869 (14-Bit, 83 kSPS)
SERIAL I/O
16-Bit
Self-Calibration
AD677/AD677A (100/200 kSPS)
AD1876 (100 kSPS, AC Specs Only)
Low Power CMOS
14-Bit
AD7872 (83 kSPS)

<1 MSPS SAMPLING WITH T/H SINGLE SUPPLY

PARALLEL I/O

Single Channel

8-Bit

AD7819 (133 kSPS)
AD7575 (100 kSPS)
AD7822 (2 MSPS, +3 V)
AD7821 (1 MSPS)

10-Bit

AD7813 (350 kSPS, +2.7 V)
AD7776 (350 kSPS)

12-Bit

AD7892 (600 kSPS, Bipolar Input)
AD7721 (312 kSPS)
AD7854 (200 kSPS)
AD7854L (100 kSPS, +3 V)
AD7880 (67 kSPS)
AD7883 (67 kSPS, +3 V)

16-Bit

AD7723 (600 kSPS)
AD7722 (200 kSPS)
AD976 (100 kSPS)
AD976A (200 kSPS)

Dual

Bipolar Input

AD7862 (12-Bit, 250 kSPS)
AD7863 (14-Bit, 210 kSPS)

Multichannel

8-Bit

AD7824 (4-Ch, 2.5 µs/Ch)
AD7828 (8-Ch, 2.5 µs/Ch)
AD8401 (4-Ch, 2.5 µs/Ch)

10-Bit

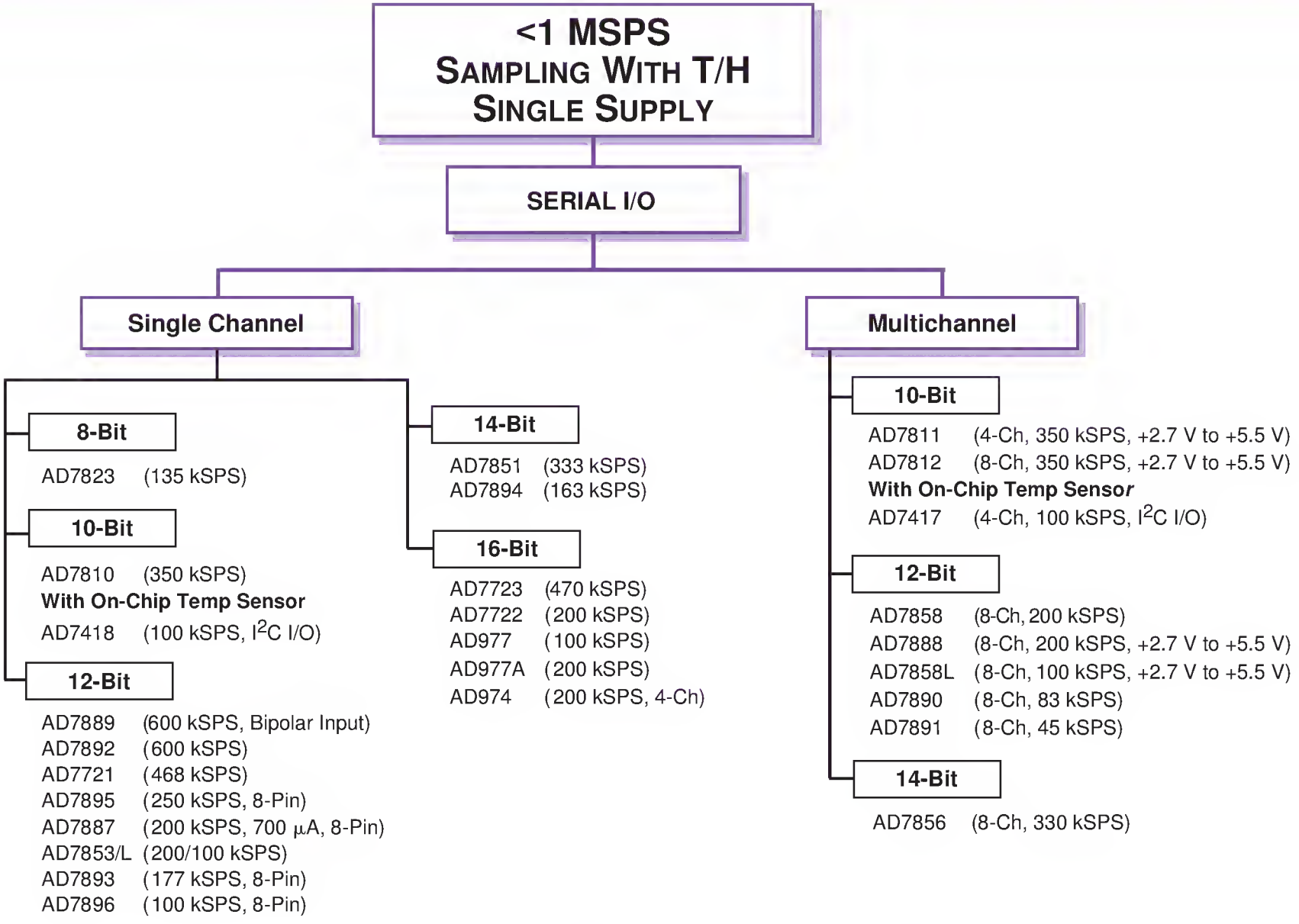
AD7579 (1-Ch, 50 kSPS, 8-Bit I/O)
AD7580 (4-Ch, 50 kSPS, 10-Bit I/O)
AD7777 (4-Ch, 2.5 µs, 2 T/Hs)
AD7778 (8-Ch, 2.5 µs, 2 T/Hs)

11-Bit

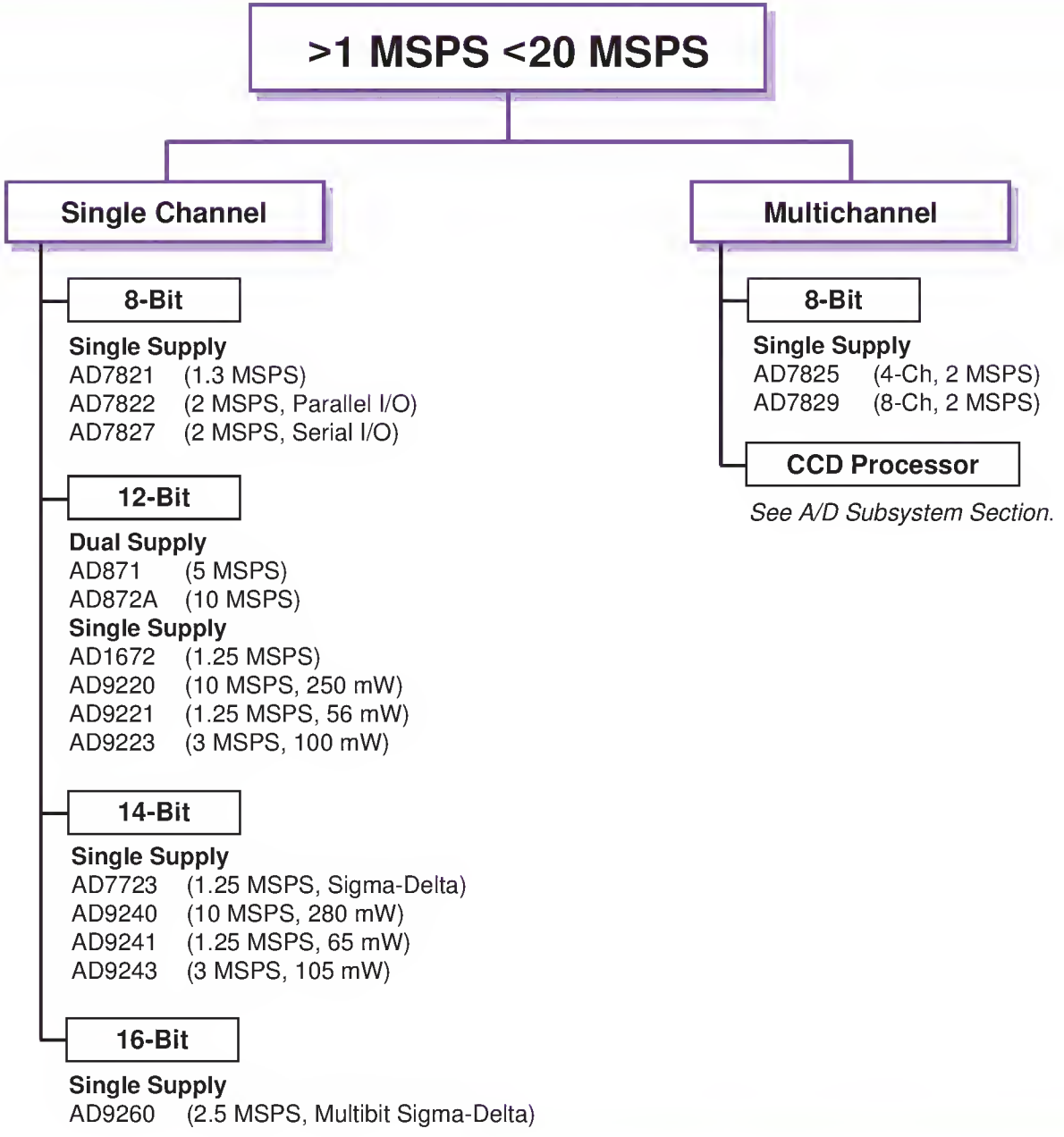
AD7861 (7-Ch, 3.2 µs, 4 w/T/Hs)
ADMC200 (4-Ch, 3.2 µs, 4 w/T/Hs)
ADMC201 (7-Ch, 3.2 µs, 4 w/T/Hs)

12-Bit

AD7864 (4-Ch, 500 kSPS)
AD7891 (8-Ch, 500 kSPS, Bipolar Input)
AD7859 (8-Ch, 200 kSPS)
AD7859L (8-Ch, 100 kSPS)


<1 MSPS
SAMPLING WITH T/H
SINGLE SUPPLY
SERIAL I/O
Single Channel
8-Bit
AD7823 (135 kSPS)
10-Bit
AD7810 (350 kSPS)
With On-Chip Temp Sensor
AD7418 (100 kSPS, I2C I/O)
12-Bit
AD7889 (600 kSPS, Bipolar Input)
AD7892 (600 kSPS)
AD7721 (468 kSPS)
AD7895 (250 kSPS, 8-Pin)
AD7887 (200 kSPS, 700 µA, 8-Pin)
AD7853/L (200/100 kSPS)
AD7893 (177 kSPS, 8-Pin)
AD7896 (100 kSPS, 8-Pin)
14-Bit
AD7851 (333 kSPS)
AD7894 (163 kSPS)
16-Bit
AD7723 (470 kSPS)
AD7722 (200 kSPS)
AD977 (100 kSPS)
AD977A (200 kSPS)
AD974 (200 kSPS, 4-Ch)
Multichannel
10-Bit
AD7811 (4-Ch, 350 kSPS, +2.7 V to +5.5 V)
AD7812 (8-Ch, 350 kSPS, +2.7 V to +5.5 V)
With On-Chip Temp Sensor
AD7417 (4-Ch, 100 kSPS, I2C I/O)
12-Bit
AD7858 (8-Ch, 200 kSPS)
AD7888 (8-Ch, 200 kSPS, +2.7 V to +5.5 V)
AD7858L (8-Ch, 100 kSPS, +2.7 V to +5.5 V)
AD7890 (8-Ch, 83 kSPS)
AD7891 (8-Ch, 45 kSPS)
14-Bit
AD7856 (8-Ch, 330 kSPS)

A/D Converters



>20 MSPS

SINGLE DUAL RAIL

8-Bit ECL

AD9002A (125 MSPS)

8-Bit TTL

AD9012 (100 MSPS)
AD9048 (35 MSPS)

10-Bit ECL

AD9060 (75 MSPS)

10-Bit TTL

AD9020 (60 MSPS)
AD9040A (40 MSPS)

DUAL DUAL RAIL

8-Bit

AD9058 (50 MSPS)

12-Bit

±5 V
AD10242 (41 MSPS)

SINGLE SINGLE RAIL

8-Bit

AD9054 (135/200 MSPS, 500 mW)
AD9057 (50/60/80 MSPS, 200 mW)
AD9280 (32 MSPS, 70 mW)
AD775 (20 MSPS, 60 mW)
AD876-8 (20 MSPS, 185 mW)

9-Bit

AD9049 (30 MSPS, 400 mW, +3/5 V V_{LOGIC})

10-Bit

AD9070 (ECL, 100 MSPS, 600 mW)
AD9071 (TTL, 100 MSPS, 600 mW)
AD9051 (60 MSPS, 250 mW)
AD9050 (40/60 MSPS, 300 mW)
AD876 (20 MSPS, 185 mW)
AD9200 (20 MSPS, 80 mW)

12-Bit TTL

±5 V
AD9225 (25 MSPS)
AD9224 (40 MSPS)
AD9042 (41 MSPS)
AD6640 (65 MSPS)

DUAL SINGLE RAIL

6-Bit

AD9066 (60 MSPS)

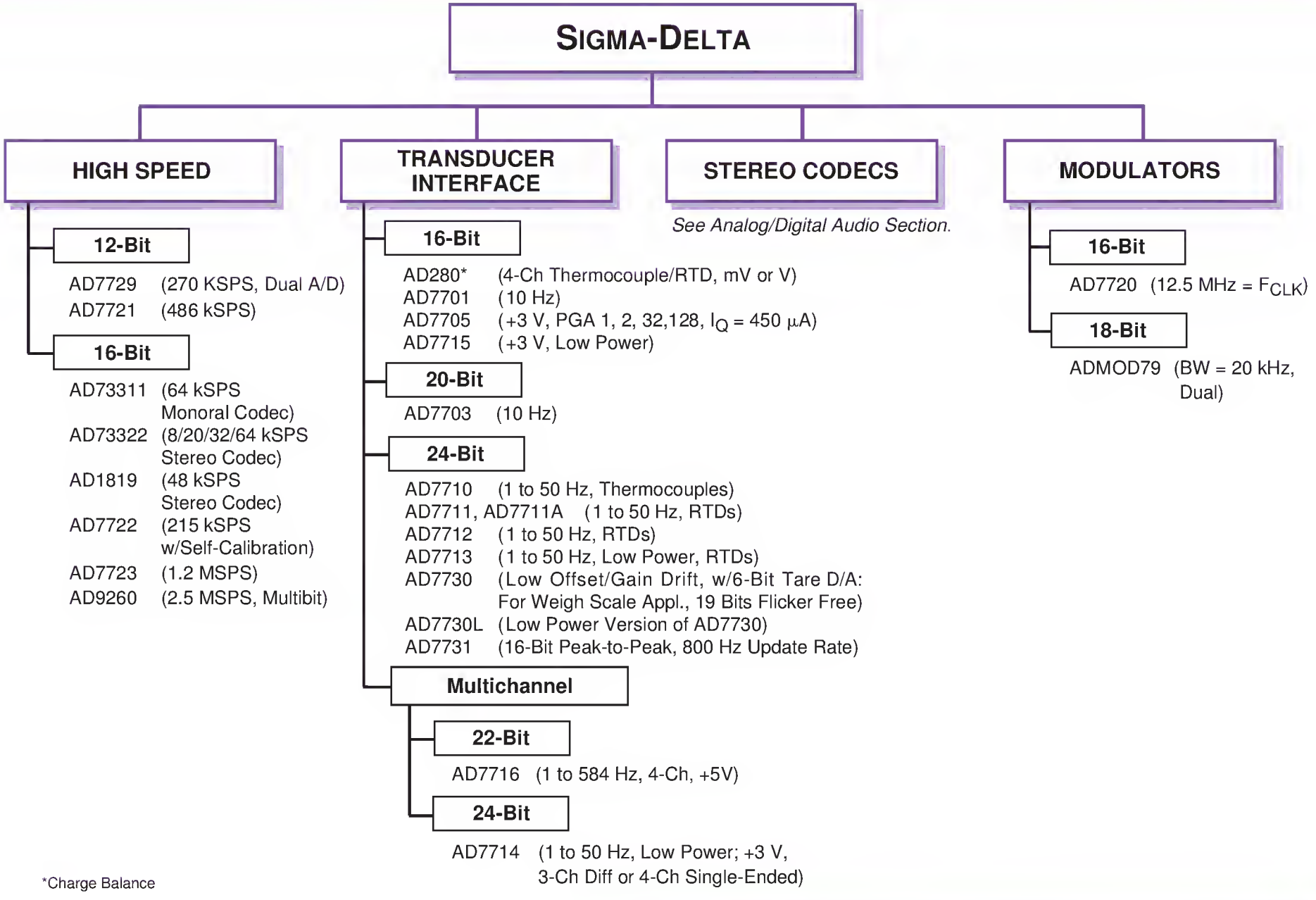
8-Bit

AD9059 (60 MSPS)
AD9281 (32 MSPS, 175 mW, +3 V)

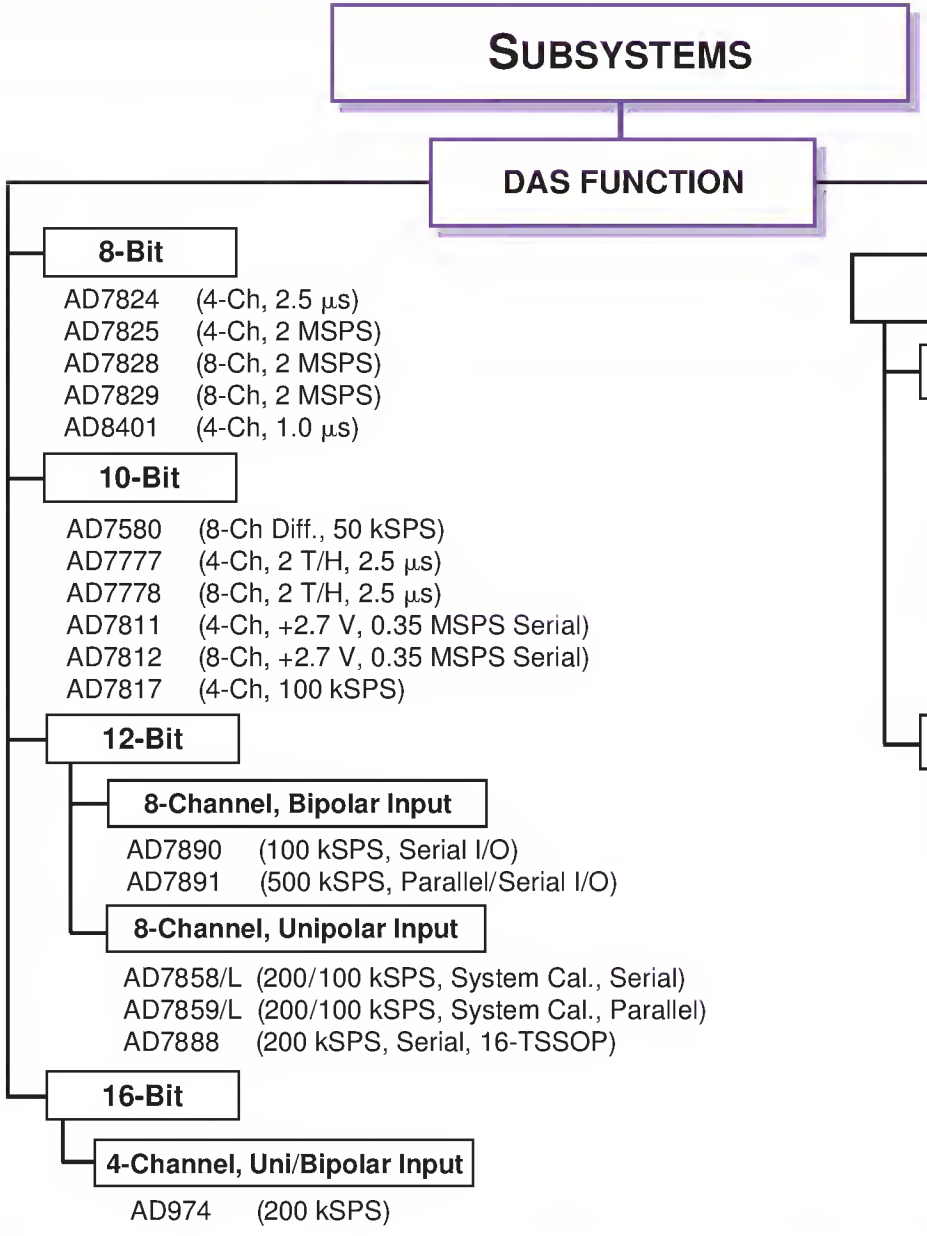
10-Bit

AD9201 (20 MSPS, 175 mW)

A/D Converters

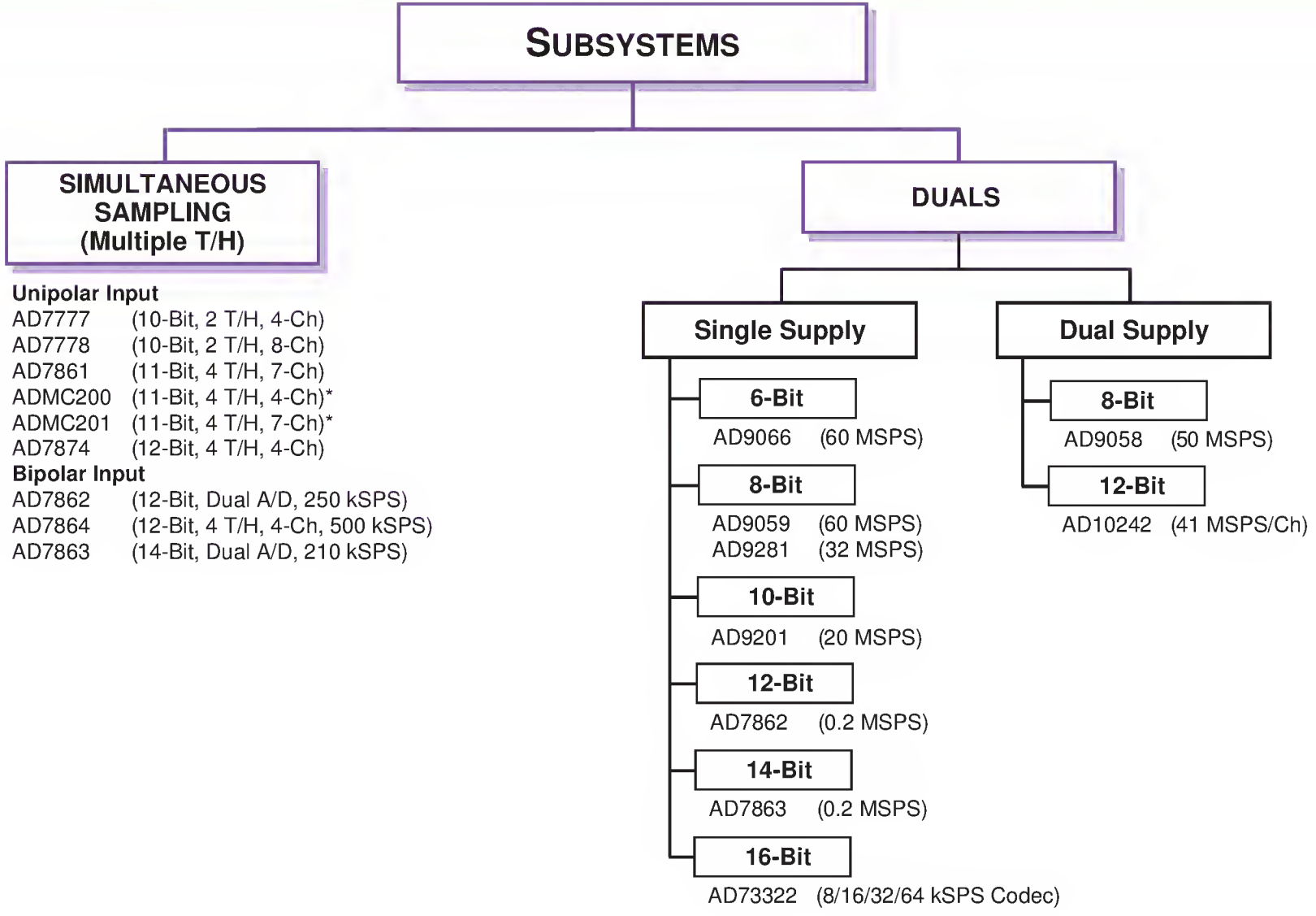


*Charge Balance



*L Version +3.0 V Operation.

A/D Converters



*L Version +3.0 V Operation.

CCD SIGNAL PROCESSORS

1-Channel

AD9801 (10-Bit, 18 MSPS)
AD9802 (10-Bit, 18 MSPS)

3-Channel

AD9805/9807 (10/12-Bit, 6 MSPS w/Triple Correlated Double Sampler, Digital Offset and Gain Control, PGA Gain 1 to 4, 16 Steps)

CODEC and I/O PORTS

8-Bit

High Speed, 8-Bit A/D

AD7339 (Dual, 8-Bit D/A, Parallel I/O)
(Dual, 8-Bit D/A, Serial I/O)

500 kSPS

AD7569
AD7669 (Dual, 8-Bit D/A)
AD7769 (Dual, 8-Bit D/A)

12-Bit

AD7729 (270 kSPS, Dual A/D, 1 10-Bit D/A)
AD7868 (83 kSPS, 1 × A/D, 1 × D/A, Serial)

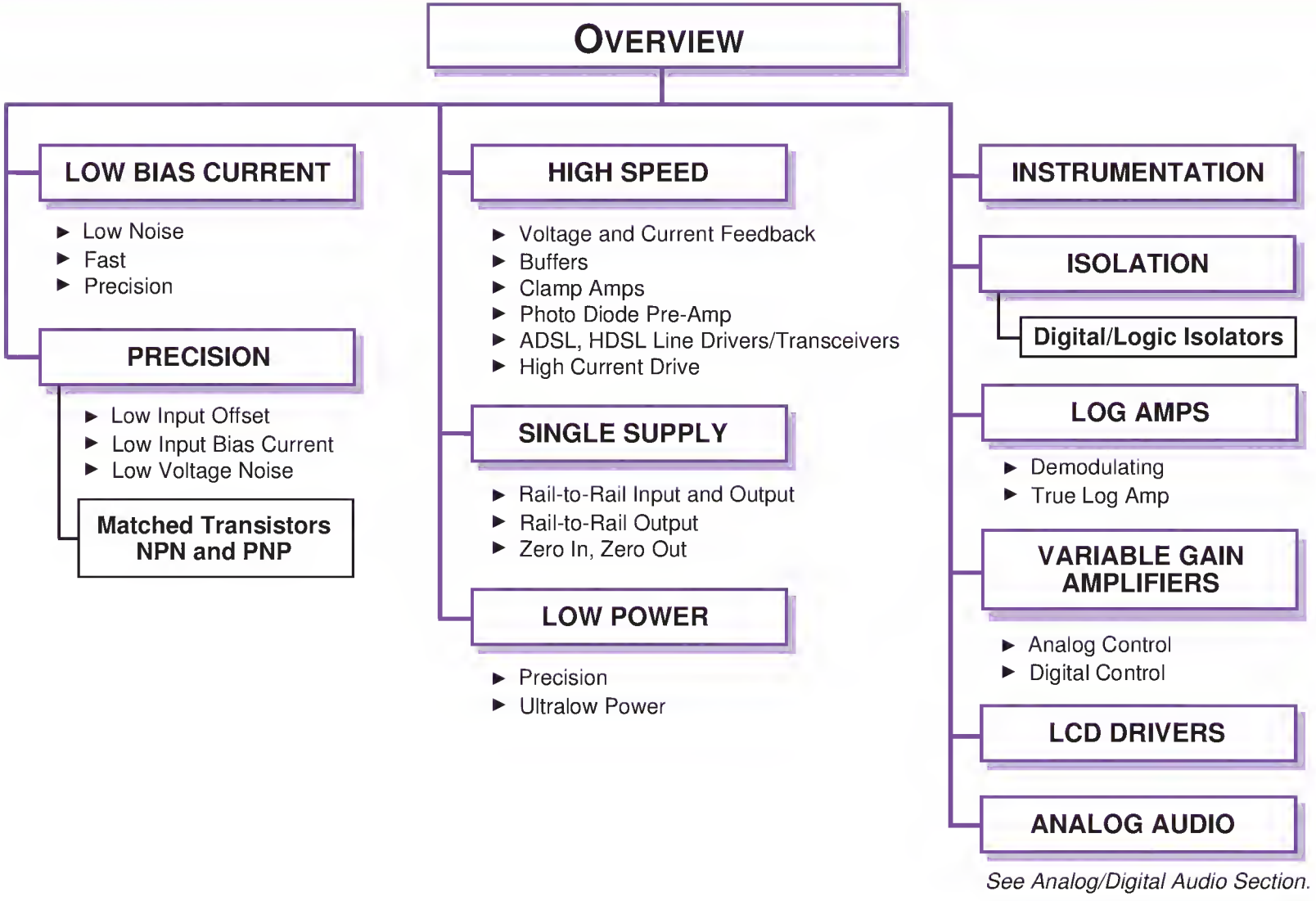
14-Bit

AD7868 (83 kSPS, 1 × A/D, 1 × D/A, Serial)

16-Bit

AD73311 (64 kSPS,Low Cost, Monaural Codec)
AD73322 (8/16/32/64 kSPS, Stereo Codec)

AMPLIFIERS



See Analog/Digital Audio Section.

LOW BIAS CURRENT

LOW NOISE

Singles

400 pA
AD743 (5 nV/√Hz/2.8 V/µs)
AD745 (5 nV/√Hz/12.5 V/µs
A_V > 5)

HIGH SPEED

Singles — Duals — Quads

16 V/µs
AD711 (25 pA) AD712 (50 pA) AD713 (50 pA)
OP249 (50–75 pA)
40 V/µs
AD744 (50–100 pA)
OP42 (50 pA) AD746 (150–250 pA)
125 V/µs
AD825

Single Supply (Rail-to-Rail Output)

3.5 V/µs, 25 pA
AD820 AD822 AD824
26 V/µs, 25 pA
AD823

Single Supply (Rail-to-Rail Output)

1.5 MHz, E_{OS} = 5 µV, TC E_{OS} = 0.1 µV/°C
AD8551 AD8552 AD8554
1.5 MHz, 3 V/µs, Low Offset, Low Cost, 50 pA
OP250 OP450
5 MHz, I_{OUT} = 250 mA/Amp
AD8531* AD8532* AD8534*
4 MHz, 4 V/µs
SSM2211 (1 Watt Audio Power Amp)

Low Power (7 V/µs @ 250 µA/Amp)

100 pA
OP282 OP482

PRECISION

Singles — Duals — Quads

1 µV/°C
AD547 (50 pA) AD647 (75 pA)
AD645 (2–5 pA)
AD795 (1–3 pA)
0.1 µV/°C, 50 pA, +3 V Rail
AD8551 AD8552 AD8554

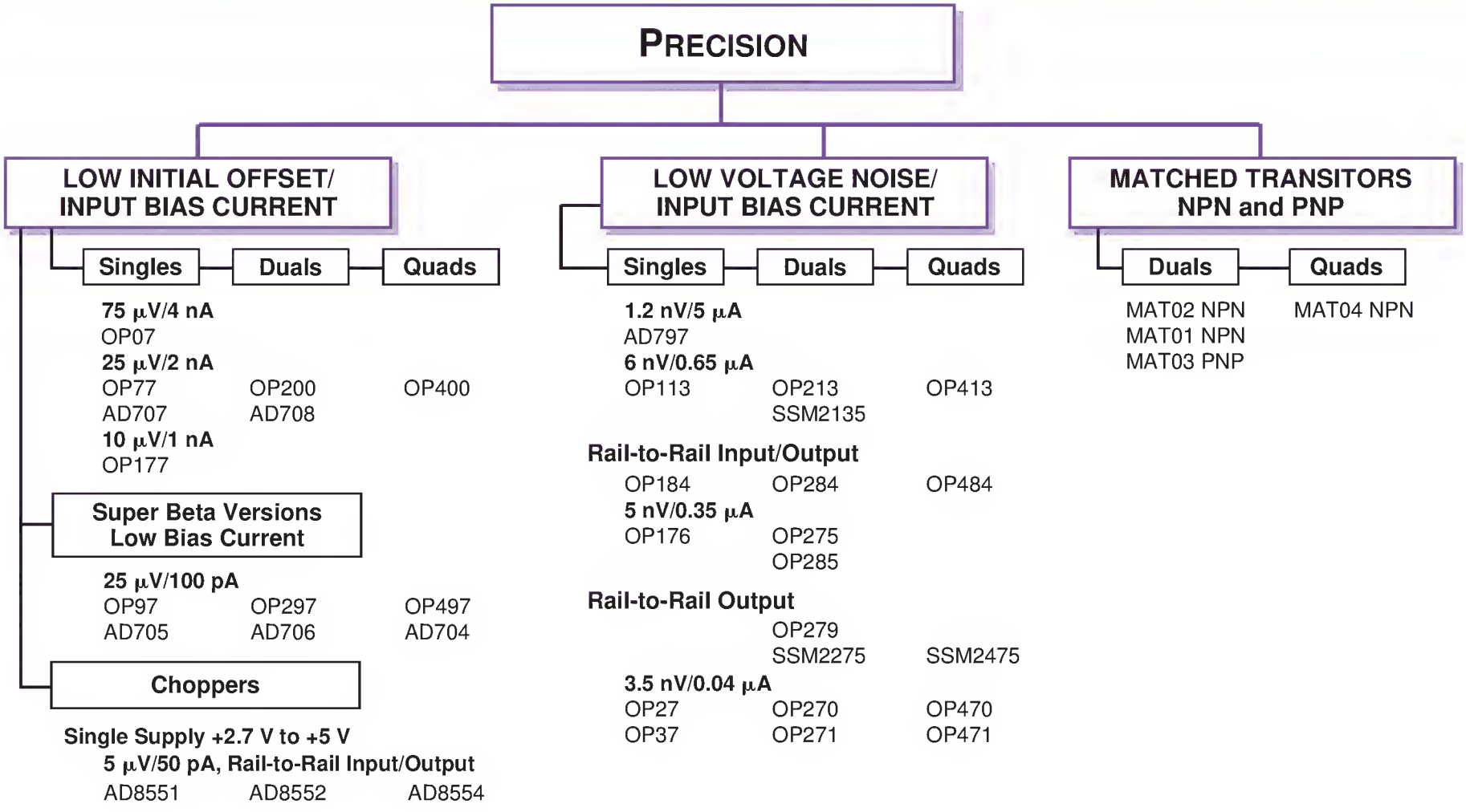
Low Power

800 µA/Amp, 25 pA
AD820 AD822 AD824
200 µA/Amp, 10 pA
AD548 AD648
250 µA/Amp, 100 pA
OP282 OP482
50 µA/Amp
AD8541 AD8542 AD8544

Electrometers

AD546 (1 pA)
AD549 (60 fA)

*CMOS


PRECISION
LOW INITIAL OFFSET/ INPUT BIAS CURRENT
Singles
Duals
Quads
75 µV/4 nA
OP07
25 µV/2 nA
OP77 OP200 OP400
AD707 AD708
10 µV/1 nA
OP177
Super Beta Versions Low Bias Current
25 µV/100 pA
OP97 OP297 OP497
AD705 AD706 AD704
Choppers
Single Supply +2.7 V to +5 V
5 µV/50 pA, Rail-to-Rail Input/Output
AD8551 AD8552 AD8554
LOW VOLTAGE NOISE/ INPUT BIAS CURRENT
Singles
Duals
Quads
1.2 nV/5 µA
AD797
6 nV/0.65 µA
OP113 OP213 OP413
SSM2135
Rail-to-Rail Input/Output
OP184 OP284 OP484
5 nV/0.35 µA
OP176 OP275
OP285
Rail-to-Rail Output
OP279
SSM2275 SSM2475
3.5 nV/0.04 µA
OP27 OP270 OP470
OP37 OP271 OP471
MATCHED TRANSITORS NPN and PNP
Duals
Quads
MAT02 NPN MAT04 NPN
MAT01 NPN
MAT03 PNP

HIGH SPEED VOLTAGE FEEDBACK

±15 V or ±5 V RAILS

First Generation

Singles | **Duals** | **Quads**

A_{CL} = 1, 50 MHz
AD847 AD827

Second Generation

A_{CL} = 1, 45 MHz, Low Cost
AD817 AD826 OP467
A_{CL} = 2, 90 MHz
AD818 AD828

Low Noise

AD829 (750 MHz)

Special Function

AD830 (Differential Input Video RCVR)

JFETS

AD825 (50 mHz)
AD843 (34 MHz)
AD823 (16 MHz, Dual)
AD845 (13 MHz)

Video Buffer

BUF04 (100 MHz)

*Output Disable Function

±5 V RAILS

Buffers

AD8079A (A_V = 2, 260 MHz)
AD8079B (A_V = 2.2, 260 MHz)
AD9630 (A_V = 1, 750 MHz)

Clamp Amps

AD8036 (A_V = 1, 150 MHz)
AD8037 (A_V = 2, 200 MHz)

Op Amps

Low Power 4 mA/Amp
350 MHz
AD8055 (Single)
AD8056 (Dual)
170 MHz
AD8047 (Single)
AD8048 (Dual)
100 MHz
AD8041* (Single)
AD8042 (Dual)
AD8044 (Quad)

Low Distortion

–72 dBc, 20 MHz
AD9631 (A_{CL} = 1, 450 MHz)
AD9632 (A_{CL} = 2, 240 MHz)
–72 dBc, 20 MHz
AD8010 (I_{OUT} = 169 mA, 250 MHz)

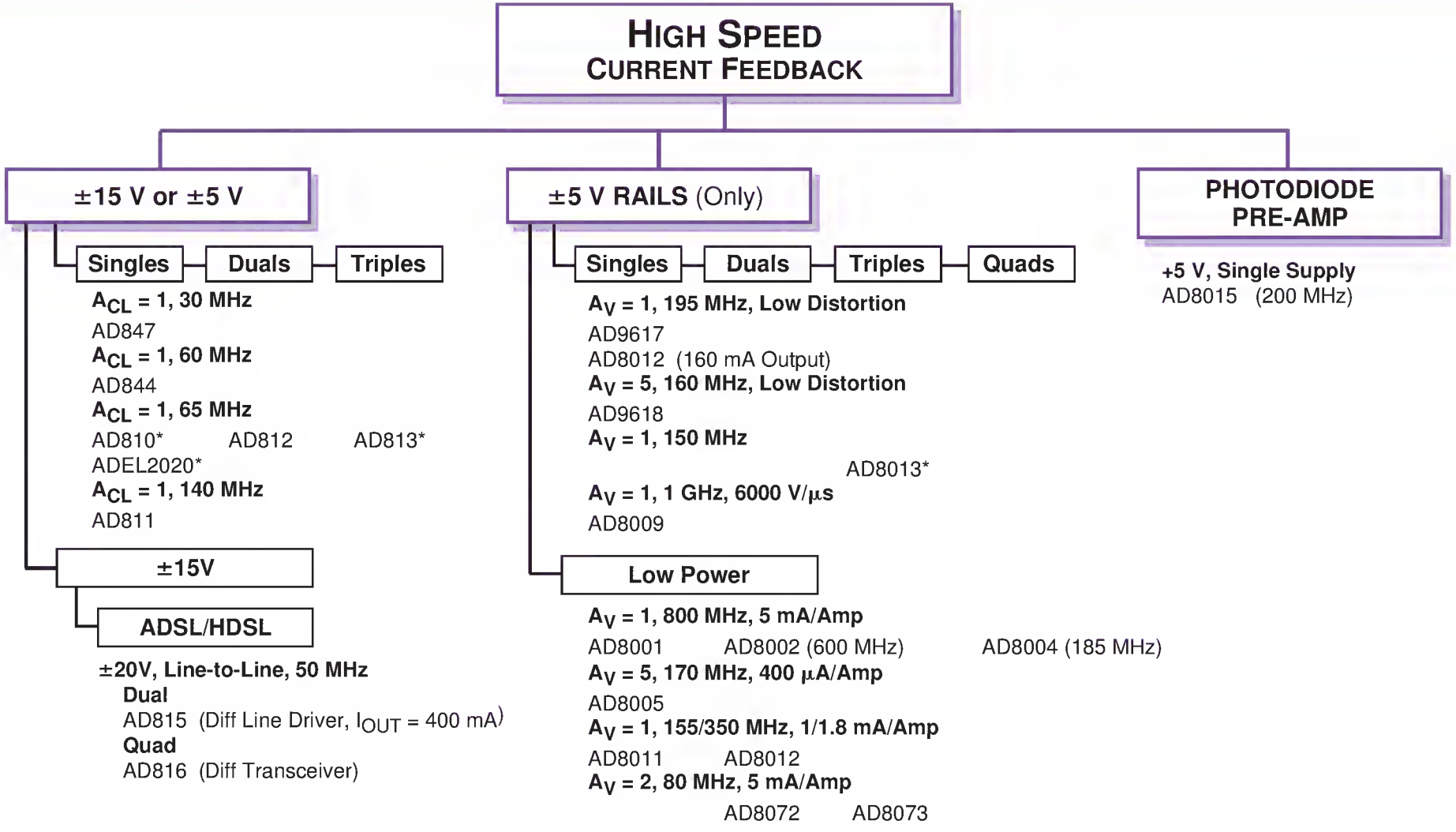
SINGLE SUPPLY

Rail-to-Rail Output

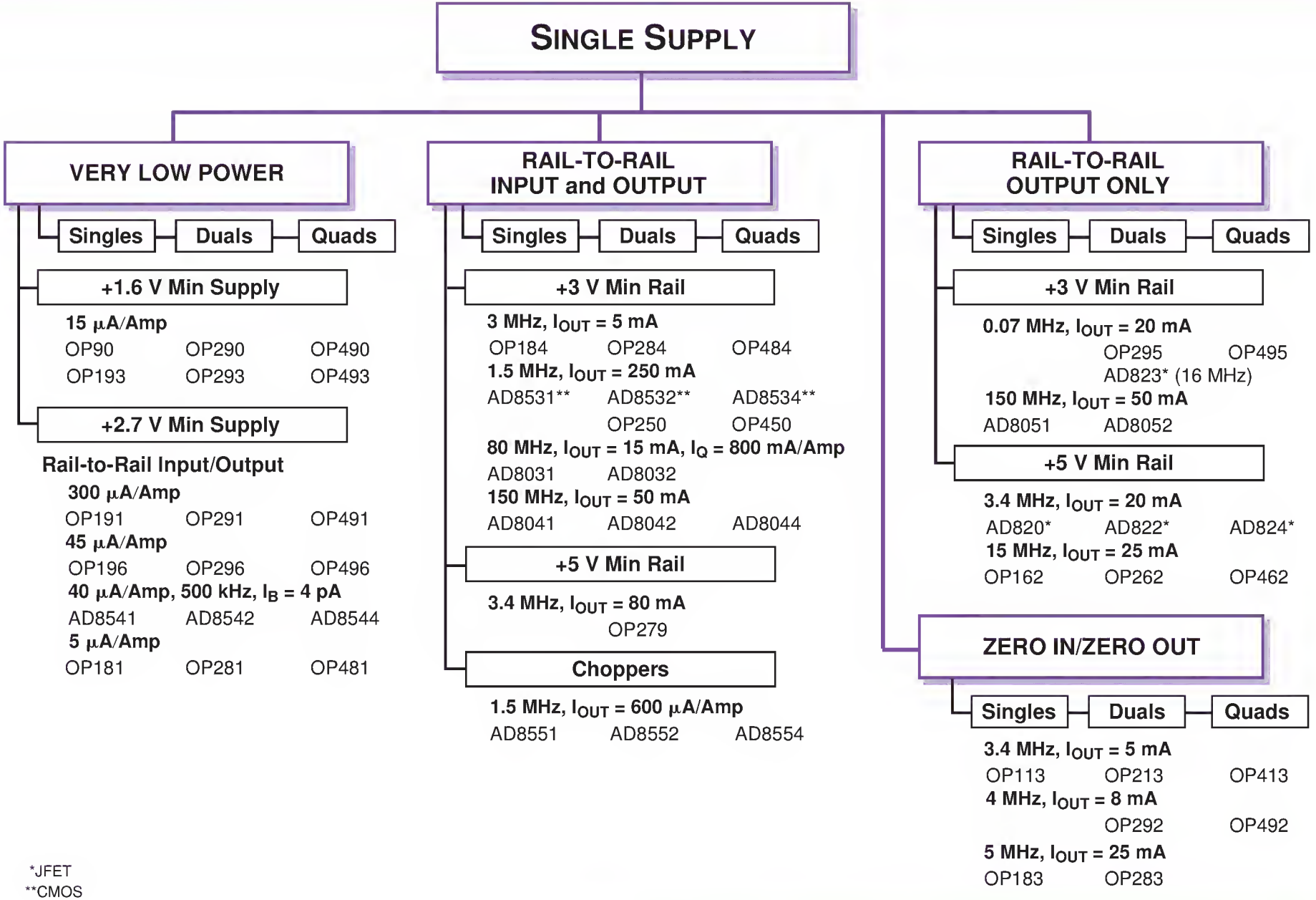
+3 V, 200 MHz
AD8051 (Single)
AD8052 (Dual)
+3 V, 130 MHz
AD8041* (Single)
AD8042 (Dual)
AD8044 (Quad)
+3 V, 16 MHz, FET
AD823 (Dual)
+3 V, 15 MHz
OP162 (Single)
AD8519 (Single, SOT-23)
OP262 (Dual)
OP462 (Quad)

Rail-to-Rail Input/Output

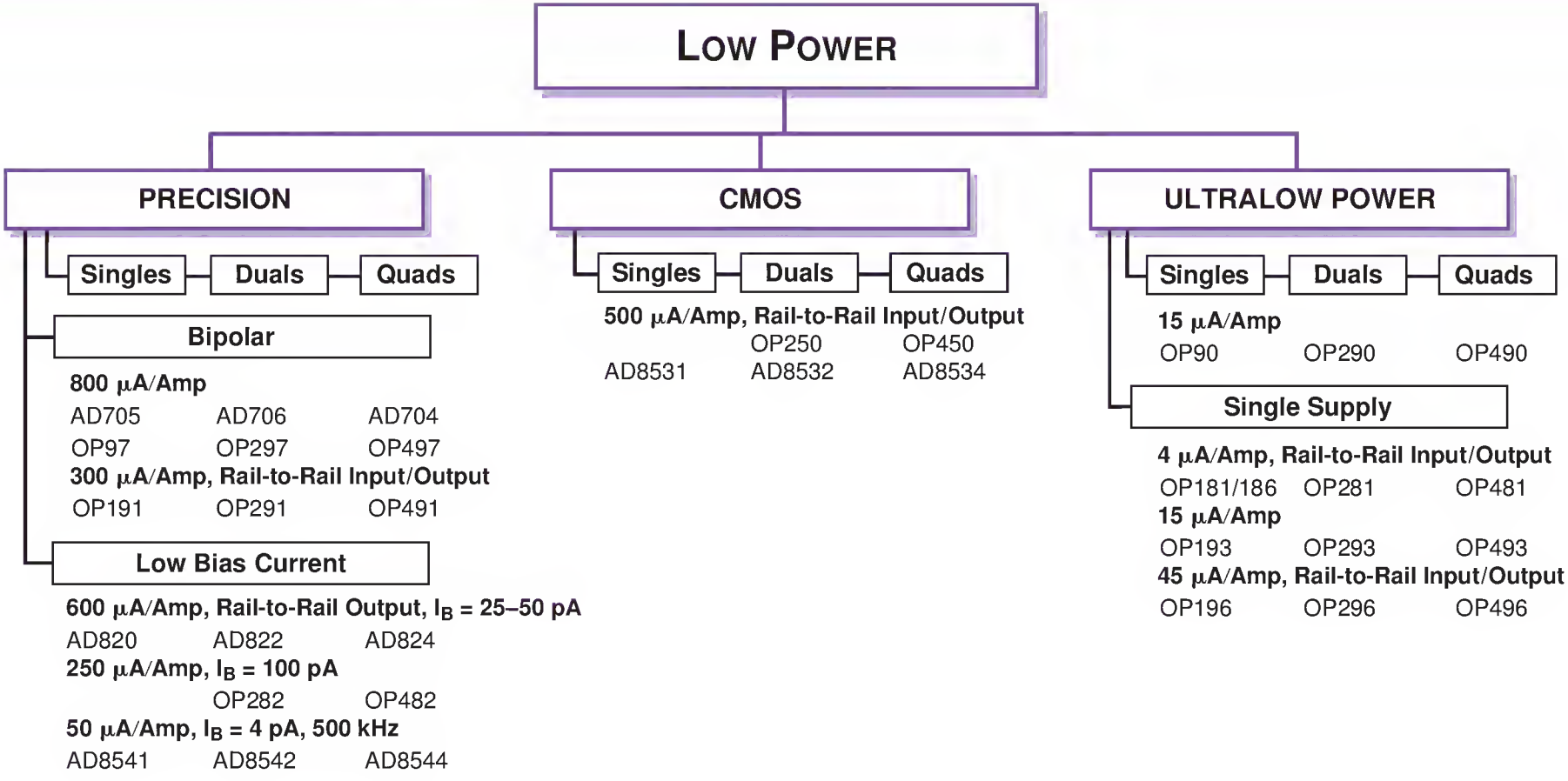
80 MHz, <1 mA/Amp
AD8031 (Single)
AD8032 (Dual)

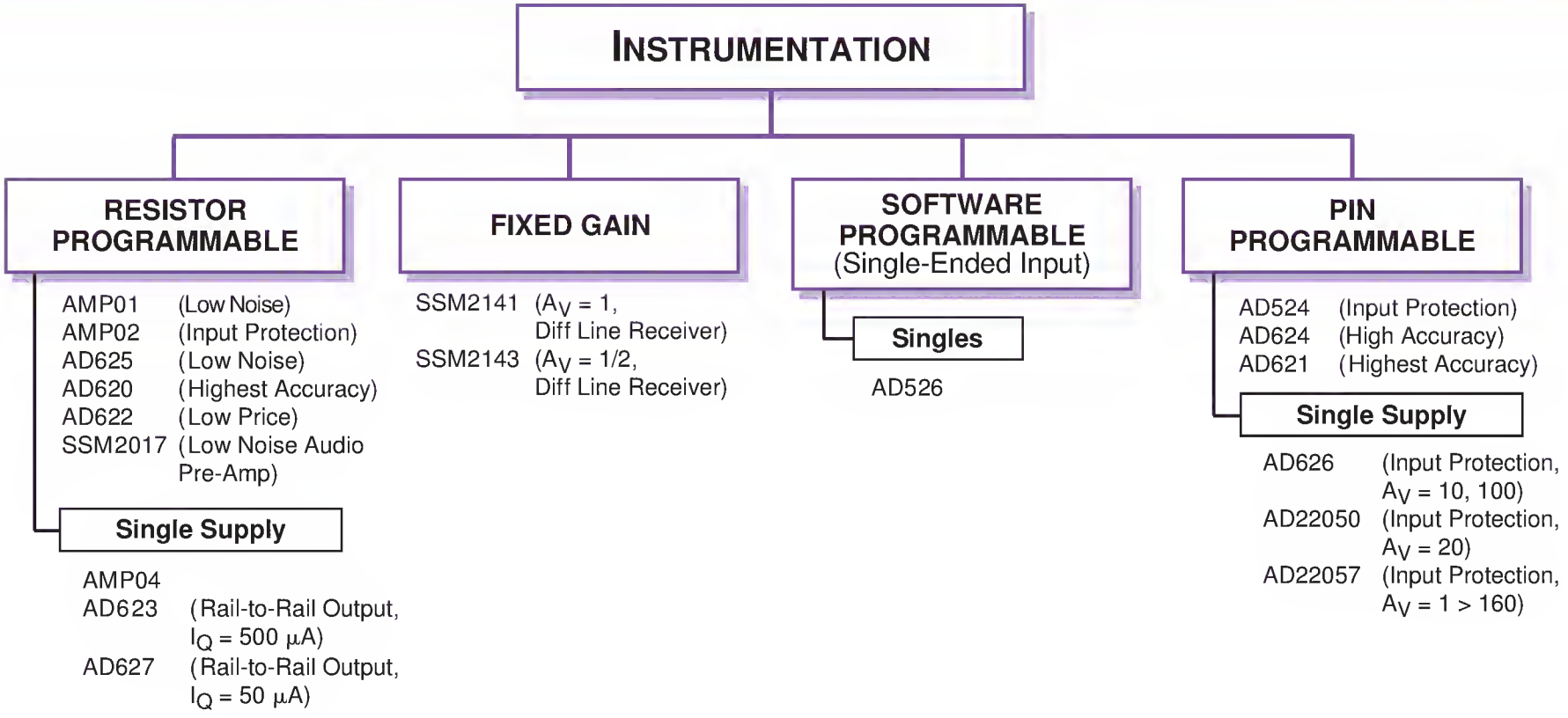


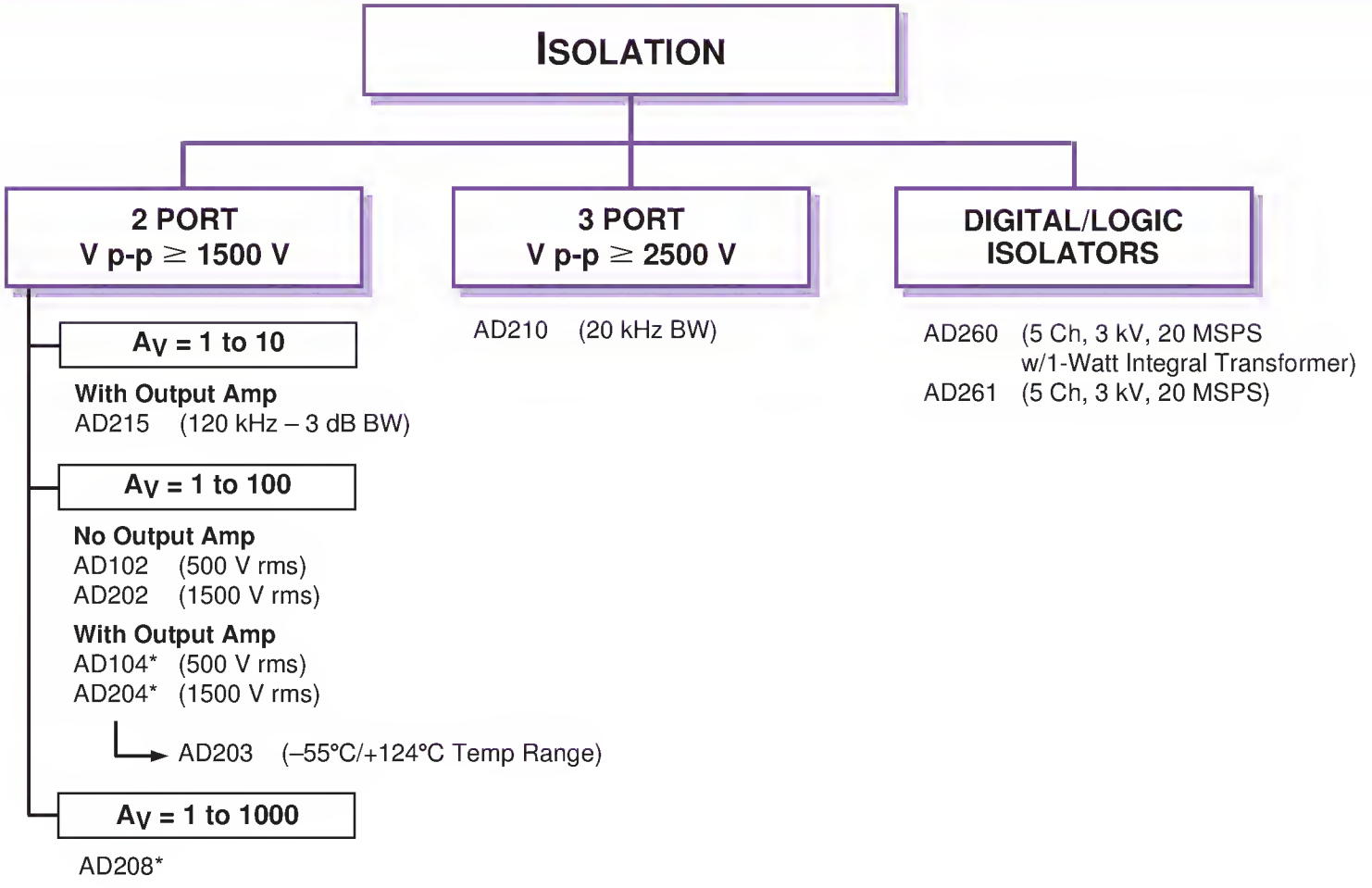
*Output Disable Function


SINGLE SUPPLY
VERY LOW POWER
Singles
Duals
Quads
+1.6 V Min Supply
15 µA/Amp
OP90 OP290 OP490
OP193 OP293 OP493
+2.7 V Min Supply
Rail-to-Rail Input/Output
300 µA/Amp
OP191 OP291 OP491
45 µA/Amp
OP196 OP296 OP496
40 µA/Amp, 500 kHz, I_B = 4 pA
AD8541 AD8542 AD8544
5 µA/Amp
OP181 OP281 OP481
RAIL-TO-RAIL INPUT and OUTPUT
Singles
Duals
Quads
+3 V Min Rail
3 MHz, I_OUT = 5 mA
OP184 OP284 OP484
1.5 MHz, I_OUT = 250 mA
AD8531** AD8532** AD8534**
OP250 OP450
80 MHz, I_OUT = 15 mA, I_Q = 800 mA/Amp
AD8031 AD8032
150 MHz, I_OUT = 50 mA
AD8041 AD8042 AD8044
+5 V Min Rail
3.4 MHz, I_OUT = 80 mA
OP279
Choppers
1.5 MHz, I_OUT = 600 µA/Amp
AD8551 AD8552 AD8554
RAIL-TO-RAIL OUTPUT ONLY
Singles
Duals
Quads
+3 V Min Rail
0.07 MHz, I_OUT = 20 mA
OP295 OP495
AD823* (16 MHz)
150 MHz, I_OUT = 50 mA
AD8051 AD8052
+5 V Min Rail
3.4 MHz, I_OUT = 20 mA
AD820* AD822* AD824*
15 MHz, I_OUT = 25 mA
OP162 OP262 OP462
ZERO IN/ZERO OUT
Singles
Duals
Quads
3.4 MHz, I_OUT = 5 mA
OP113 OP213 OP413
4 MHz, I_OUT = 8 mA
OP292 OP492
5 MHz, I_OUT = 25 mA
OP183 OP283

*JFET
**CMOS


LOW POWER
PRECISION
Singles
Duals
Quads
Bipolar
800 µA/Amp
AD705 AD706 AD704
OP97 OP297 OP497
300 µA/Amp, Rail-to-Rail Input/Output
OP191 OP291 OP491
Low Bias Current
600 µA/Amp, Rail-to-Rail Output, IB = 25–50 pA
AD820 AD822 AD824
250 µA/Amp, IB = 100 pA
OP282 OP482
50 µA/Amp, IB = 4 pA, 500 kHz
AD8541 AD8542 AD8544
CMOS
Singles
Duals
Quads
500 µA/Amp, Rail-to-Rail Input/Output
OP250 OP450
AD8531 AD8532 AD8534
ULTRALOW POWER
Singles
Duals
Quads
15 µA/Amp
OP90 OP290 OP490
Single Supply
4 µA/Amp, Rail-to-Rail Input/Output
OP181/186 OP281 OP481
15 µA/Amp
OP193 OP293 OP493
45 µA/Amp, Rail-to-Rail Input/Output
OP196 OP296 OP496


INSTRUMENTATION
RESISTOR PROGRAMMABLE
AMP01 (Low Noise)
AMP02 (Input Protection)
AD625 (Low Noise)
AD620 (Highest Accuracy)
AD622 (Low Price)
SSM2017 (Low Noise Audio Pre-Amp)
Single Supply
AMP04
AD623 (Rail-to-Rail Output, I_Q = 500 µA)
AD627 (Rail-to-Rail Output, I_Q = 50 µA)
FIXED GAIN
SSM2141 (A_V = 1, Diff Line Receiver)
SSM2143 (A_V = 1/2, Diff Line Receiver)
SOFTWARE PROGRAMMABLE (Single-Ended Input)
Singles
AD526
PIN PROGRAMMABLE
AD524 (Input Protection)
AD624 (High Accuracy)
AD621 (Highest Accuracy)
Single Supply
AD626 (Input Protection, A_V = 10, 100)
AD22050 (Input Protection, A_V = 20)
AD22057 (Input Protection, A_V = 1 > 160)



*Multichannel Requires Clock Driver AD246

AMPLIFIERS

LOG AMPS

AD606 (50 MHz, 80 dB, Limiter)
AD640 (120 MHz, 50 dB)
AD8307 (500 MHz, 86 dB)
AD641 (250 MHz, 44 dB)

VARIABLE GAIN

ANALOG CONTROL, AUDIO

140 dB Gain Range
SSM2018T (Voltage Output)
SSM2018T (Current Output)

120 dB Gain Range
SSM2164 (Quad)

DIGITAL CONTROL, VIDEO

+5 V Supply
AD8320 (8-Bit, 200 MHz, 36 dB)

ANALOG CONTROL, VIDEO

±15 V Supplies
AD600 (35 MHz, Dual, 0 to +40 dB)
AD602 (35 MHz, Dual, –10 to +30 dB)
AD603 (115 MHz, –10 to +30 dB)
AD604 (50 MHz, Dual, w/Pre/Amp)

+5 V Single Supply
AD605 (45 MHz, +48 dB/Channel)

LCD DRIVERS

+3.3 V, 2 Muxed Input Channels/Drivers
AD8509 (9 Drivers, I_{OUT} = 20 mA/Ch)
AD8511 (11 Drivers, I_{OUT} = 20 mA/Ch)

Analog Computational Circuits

MULTIPLIERS/ DIVIDERS/ SQUARE ROOT

Voltage Output

AD534 (1 MHz, Precision)
AD633 (1 MHz, Low Cost)
AD734 (10 MHz)
AD835 (250 MHz)
MLT04 (8 MHz, Quad)

Current Output

AD539 (60 MHz)
AD834 (500 MHz)

Special Function

AD538 ($V_O = V_Y \left(\frac{V_Z}{V_X}\right)^M$ M = 1/5 to 5)

RMS CONVERTERS

±15V Rails

AD536A (2.3 MHz, BW @ 1V)
AD637 (8.0 MHz, BW @ 1 V)

Low Power ±5V Rails

AD737 (0.16 mA)
AD736 (0.2 mA)
AD636 (1.0 mA)

TRIG FUNCTION GENERATORS

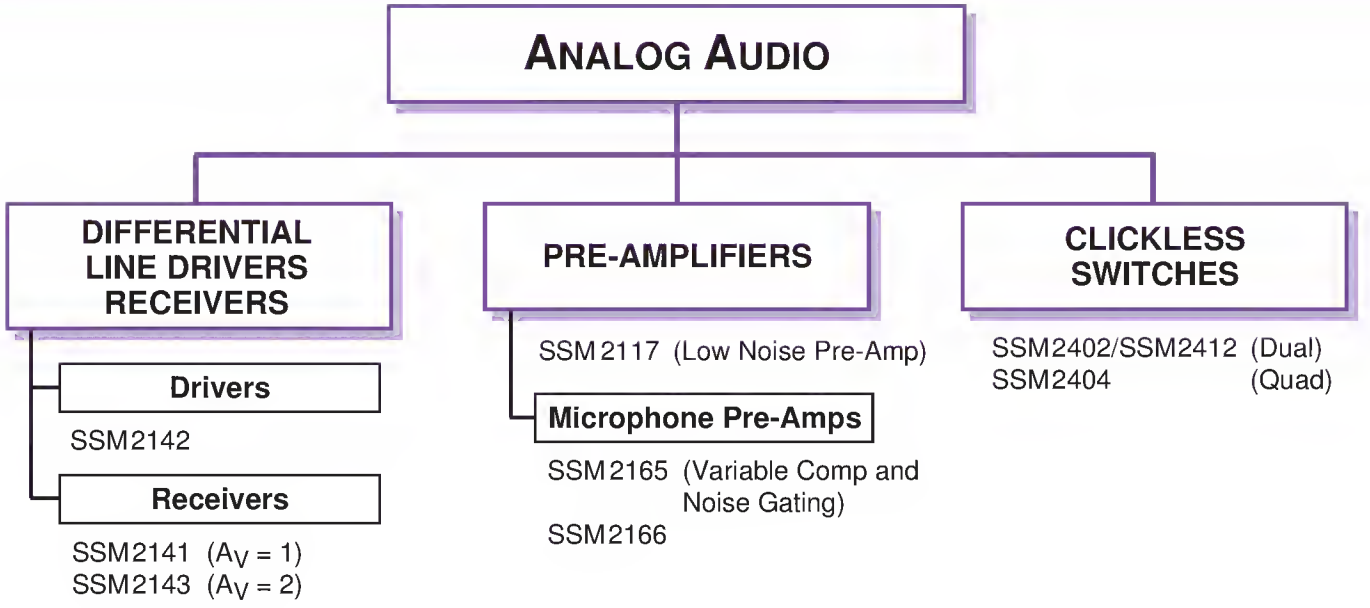
AD639

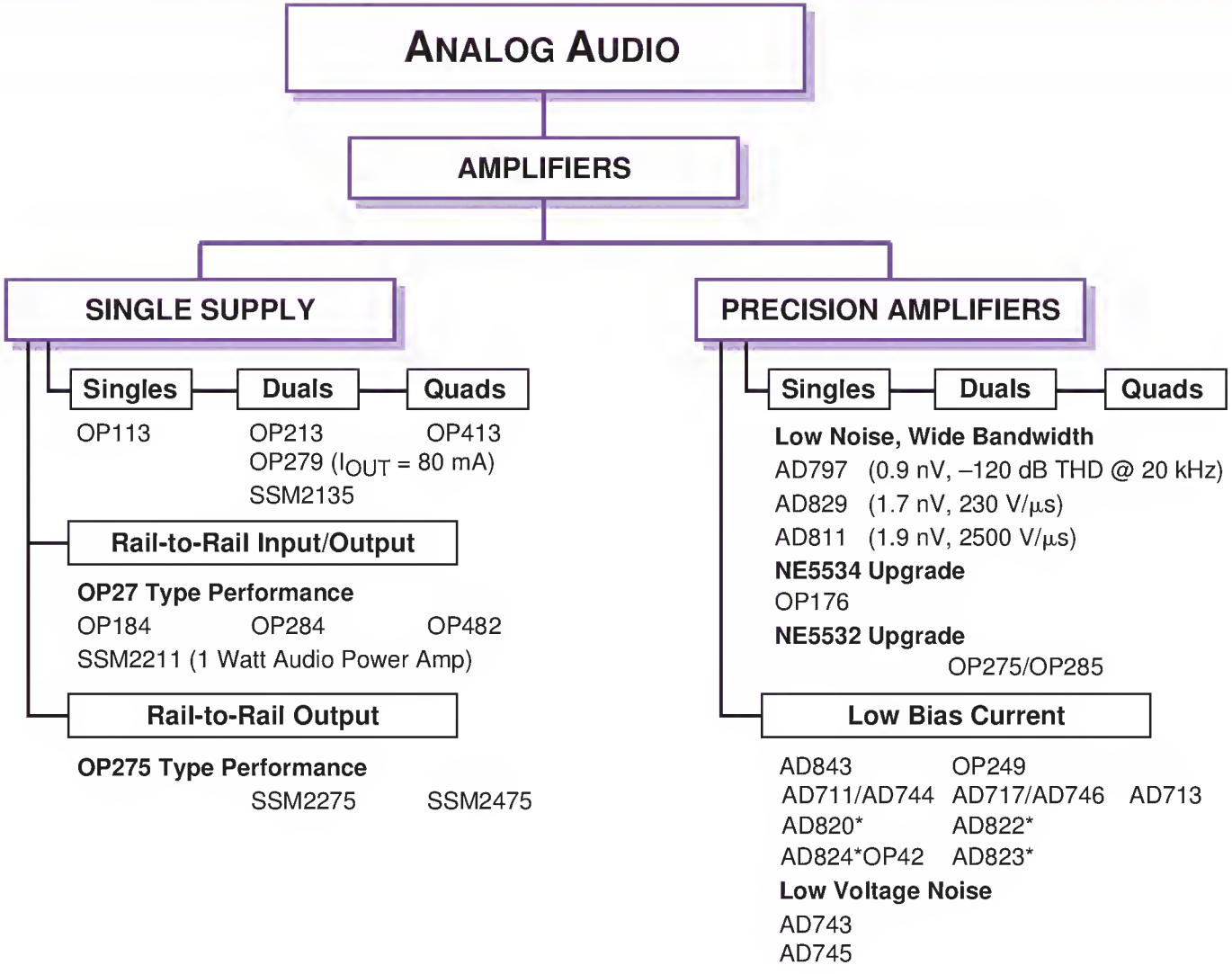
BALANCED MODULATORS

AD630 (2 MHz)

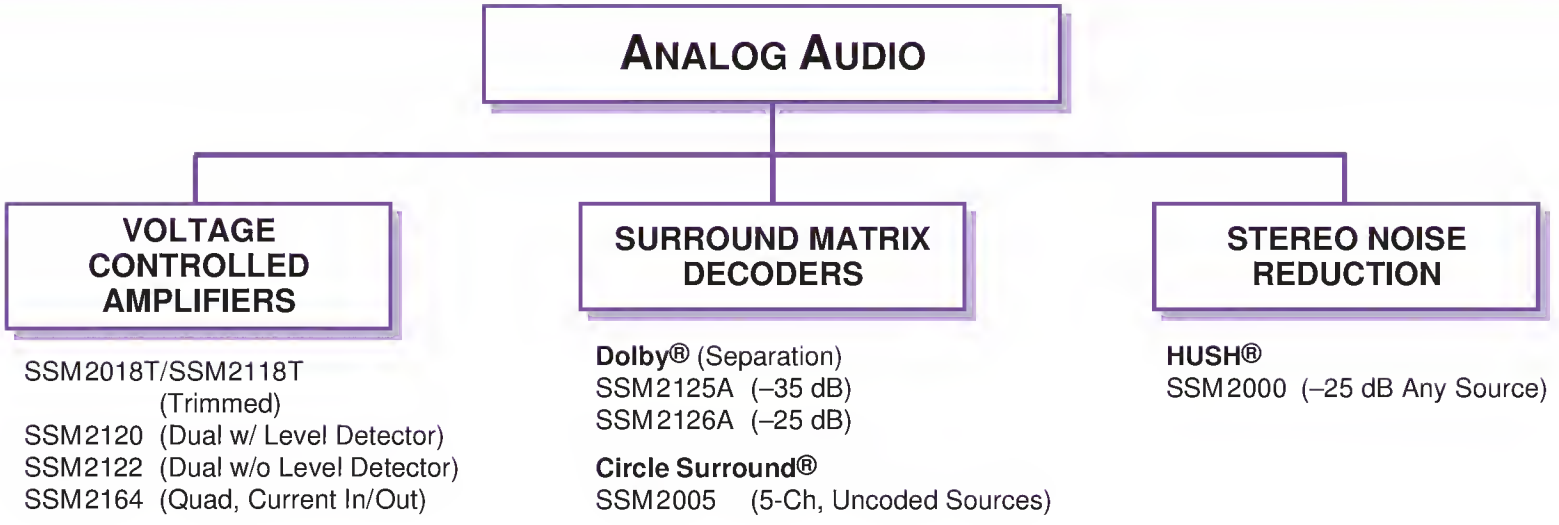
RGB TO NTSC/PAL

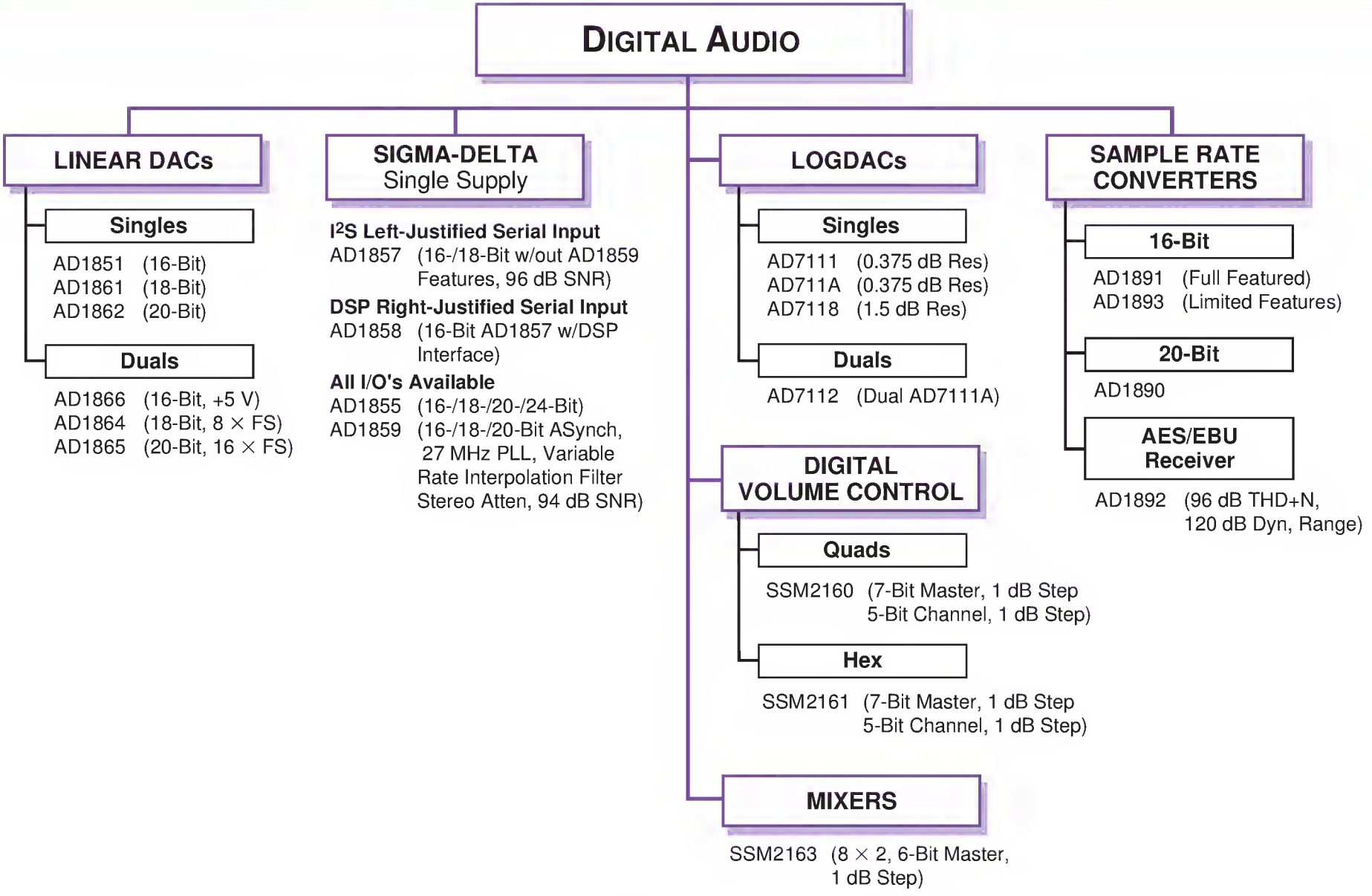
See Video Section.

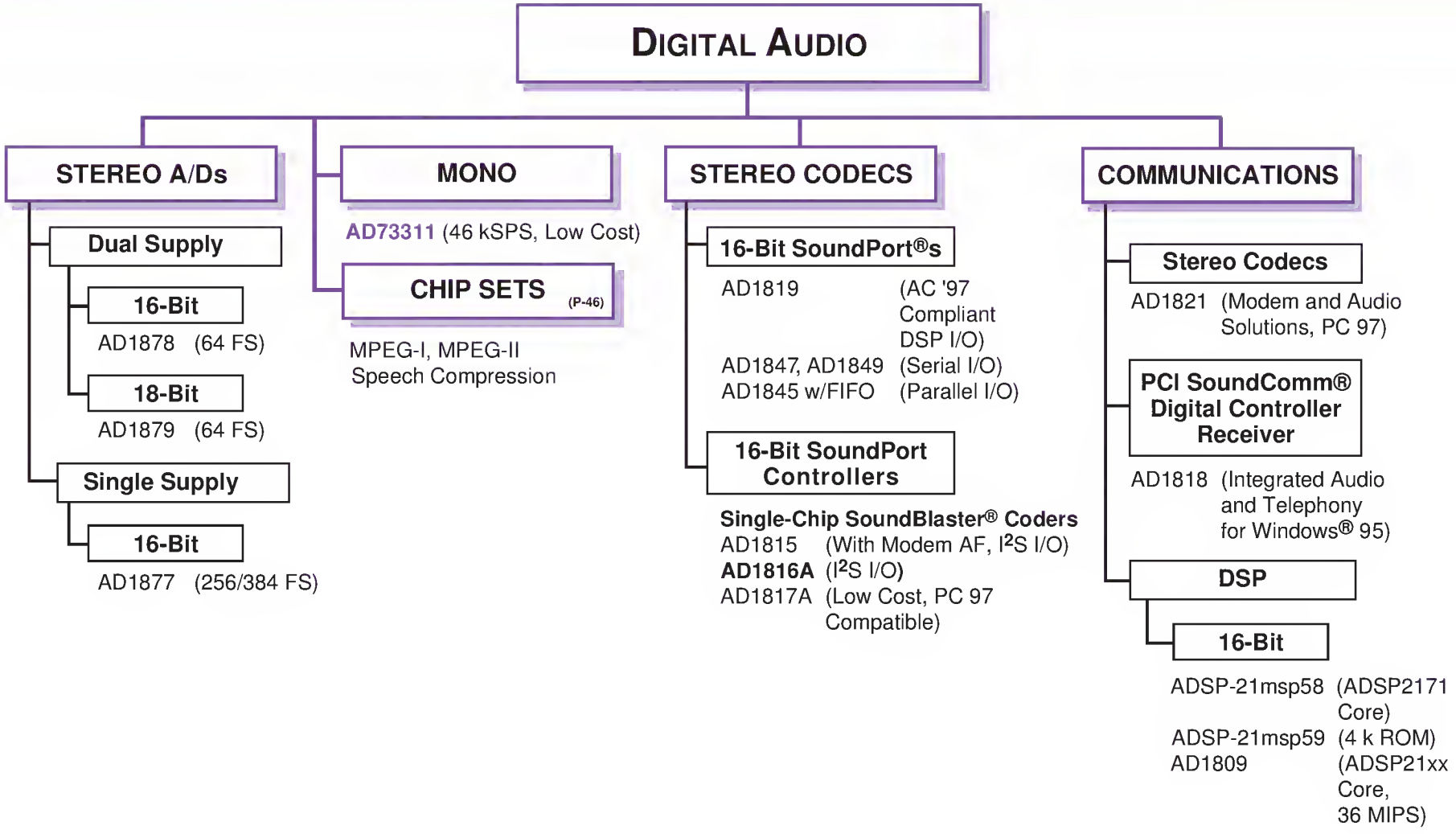

ANALOG AUDIO
DIFFERENTIAL LINE DRIVERS RECEIVERS
Drivers
SSM2142
Receivers
SSM2141 (AV = 1)
SSM2143 (AV = 2)
PRE-AMPLIFIERS
SSM2117 (Low Noise Pre-Amp)
Microphone Pre-Amps
SSM2165 (Variable Comp and Noise Gating)
SSM2166
CLICKLESS SWITCHES
SSM2402/SSM2412 (Dual)
SSM2404 (Quad)



*Rail-to-Rail Output.




DIGITAL AUDIO
LINEAR DACs
Singles
AD1851 (16-Bit)
AD1861 (18-Bit)
AD1862 (20-Bit)
Duals
AD1866 (16-Bit, +5 V)
AD1864 (18-Bit, 8 × FS)
AD1865 (20-Bit, 16 × FS)
SIGMA-DELTA
Single Supply
I²S Left-Justified Serial Input
AD1857 (16-/18-Bit w/out AD1859 Features, 96 dB SNR)
DSP Right-Justified Serial Input
AD1858 (16-Bit AD1857 w/DSP Interface)
All I/O's Available
AD1855 (16-/18-/20-/24-Bit)
AD1859 (16-/18-/20-Bit ASynch, 27 MHz PLL, Variable Rate Interpolation Filter Stereo Atten, 94 dB SNR)
LOGDACs
Singles
AD7111 (0.375 dB Res)
AD711A (0.375 dB Res)
AD7118 (1.5 dB Res)
Duals
AD7112 (Dual AD7111A)
DIGITAL VOLUME CONTROL
Quads
SSM2160 (7-Bit Master, 1 dB Step 5-Bit Channel, 1 dB Step)
Hex
SSM2161 (7-Bit Master, 1 dB Step 5-Bit Channel, 1 dB Step)
MIXERS
SSM2163 (8 × 2, 6-Bit Master, 1 dB Step)
SAMPLE RATE CONVERTERS
16-Bit
AD1891 (Full Featured)
AD1893 (Limited Features)
20-Bit
AD1890
AES/EBU Receiver
AD1892 (96 dB THD+N, 120 dB Dyn, Range)



ATE, Time Domain & Laser Diode Drivers

ATE and TIME DOMAIN

Pin Driver

AD1324 (200 MHz, –2 V to +7 V)
AD53040 (500 MHz, –2 V to +8 V)

Active Load

AD1315 (±50 mA, 1.5 ns Prop Delay)
AD53041 (±50, 16, 5 mA, 1.8 ns)

Window Comparator*

Single

AD1317 (–2 V to +7 V CMVR, 2.5 ns Prop Delay)
AD53042 (Tracking to 5000 V/µs)

Delay Generator

AD9500 (TTL, 2.5 ns to 10 µs)
AD9501 (TTL, 7.5 ns to 10 µs)

Pulse Width Modulator

AD9560A (0.5 to 50 MHz)
AD9561 (0.5 to 50 MHz, 8-Bit, Low Cost)

LASER DIODE DRIVERS

w/ Light Power Control, +5 V, 200 MHz

AD9660 (Two Power Levels, I_{OUT} = 150 mA Time)
AD9661A (One Power Level, I_{OUT} = 120 mA Time)

*For Precision Comparators See Page 33.

WIRELESS

32-Bit Direct Digital Synthesis

Serial and Parallel I/O

AD7008 (IF Modulator 35 MHz, 10-Bit D/A)
AD9830 (50 MHz, w/Sine LUT On-Board Ref, 10-Bit D/A)
AD9831 (25 MHz, w/Sine LUT On-Board Ref, 10-Bit D/A)
AD9850 (125 MHz, 10-Bit D/A, w/5–Bit Phase Modulation and On-Chip Comparator)

Serial I/O

AD9832 (25 MHz, w/Sine LUT On-Board Ref, 10-Bit D/A)

Phase Frequency Discriminator

AD9901 (40 MHz to 70 MHz, No Dead Zone)

Baseband I/O Ports

AD7002 (GSM Baseband I/O Port)
AD7010 ($\pi/4$ DQPSK Baseband Transmit Port PDC STD $\alpha = 0.35$)
AD7011 (Is54/Is136 Baseband Transmit Port)
AD7013 (Is54/Is136 and TETRA Baseband Transmit Port)
AD7015 (GSM Baseband I/O Port and Voiceband CODEC)
AD20msp410 (GSM Baseband Chipset)
AD20msp415 (GSM Baseband Chipset)

IF Subsystems

Receivers

AD607 (Mixer, Linear IF, I/Q Demod)
AD6458 (Mixer, Linear IF, I/Q Demod)
AD6459 (Mixer, Linear IF, I/Q Demod)
AD608 (Mixer, Limiting IF)

Transceivers

AD9832 (359 MHz RF, GSM)
AD6402 (131 MHz RF, DECT)

Mixer

AD831 (500 MHz, RF + IF, +24 dBm, IP3)

RF Transceivers

AD6190 (900 MHz Cordless Phone)

VGA Linear in dB

See Amplifier Section.

COMMUNICATIONS

TELECOM/DATACOM

Combo Modem/Voice/Fax
AD1821 (PC 97 Logo Compatible)

DSP Processors
ADSP-21msp58 (ADSP-2171 and Voiceband Codec)
ADSP-21msp59 (AD21msp58 w/ROM)
(ADSP-21xx + Modem/Voice/Fax Controller)
AD1809 (Host-Based Modem)

Multimedia Cable Networking Systems
AD6201 (Complete Single Chip Solution)

CHIPSETS

GSM Baseband
AD20msp410 (GSM Baseband Chipset)

Diversity Base Station Receiver
AD6600/AD6620 (65 MSPS Dual A/D)

IS-54/IS-136
AD607, AD7011, AD7013

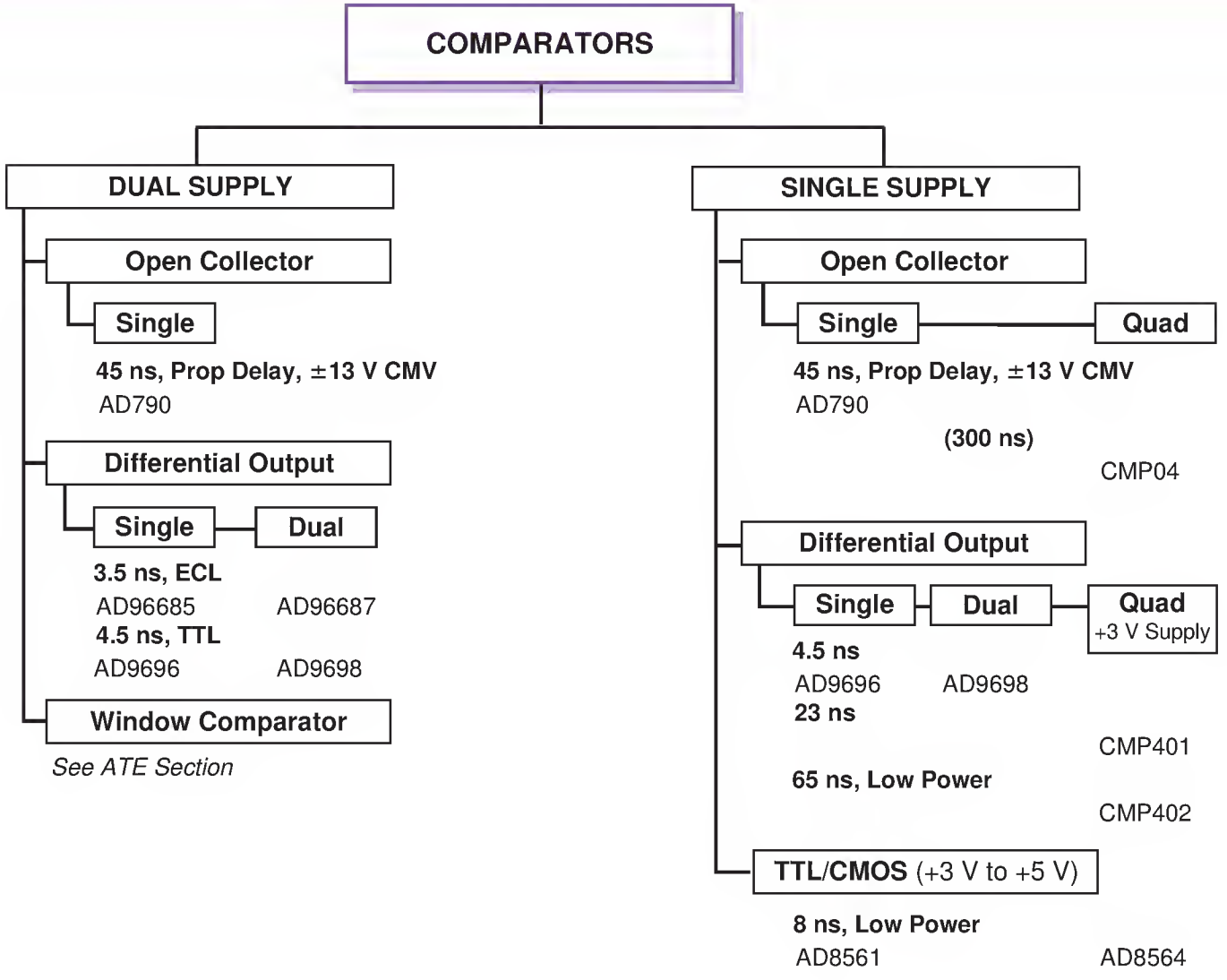
Multichannel/Mode Base Station Receiver
65 MSPS Decimating Receiver
AD6640/AD6620 (12-Bit, 65 MSPS A/D)

DECT
Baseband Radio Circuitry
AD6600

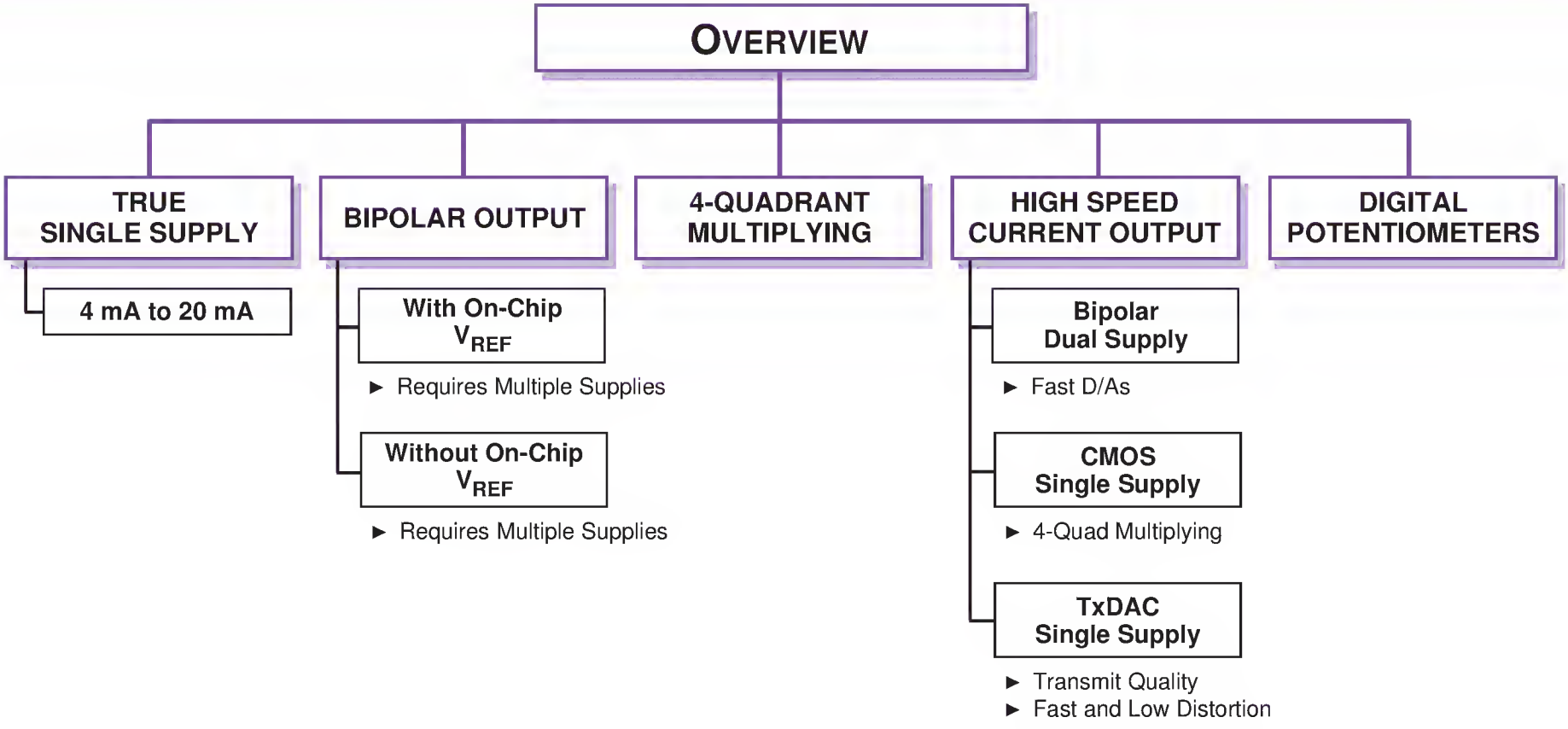
ADSL
AD20msp910 Chipset
AD6435 (Digital Interface Control IC)
AD6436 (DMT Coprocessor)
AD6437 (Analog Front End)

GPS
ADSST-NAV2000 (8-Ch, SHARC®-Based)
ADSST-NAV2100 (8-Ch, Fixed-Point-Based)

COMPARATORS



D/A Converters



TRUE SINGLE SUPPLY

SINGLES

7-Bit

AD557 (+5 V, 8-Bit I/O)

8-Bit

AD558 (+5/15 V, 8-Bit I/O)
AD7224 (+15 V, 8-Bit I/O)
AD5300 (+2.7 V, Serial I/O, Rail-to-Rail Output)
AD7801 (+2.7 V, 8-Bit I/O)

10-Bit

AD5310 (+2.7 V, Serial I/O, Rail-to-Rail Output)
AD7391 (+2.7 V, I_Q = 100 µA, Serial)
AD7393 (+2.7 V, I_Q = 100 µA, 10-Bit I/O)

12-Bit

AD7243 (+12/15 V, Serial)
AD7248A (+12 V, 8-Bit I/O)
AD5320 (+2.7 V, Serial I/O, Rail-to-Rail Output)
AD7390 (+2.7 V, I_Q = 100 µA, Serial I/O)
AD7392 (+2.7 V, I_Q = 100 µA, 12-Bit I/O)
AD8300 (+3 V, Serial I/O)
DAC8512 (+5 V, Serial)
DAC8562 (+5 V, Parallel)

16-Bit

AD420 (+12/32 V, Serial, 4-20 mA)
AD421 (Loop Powered, 4-20 mA)

DUALS

8-Bit

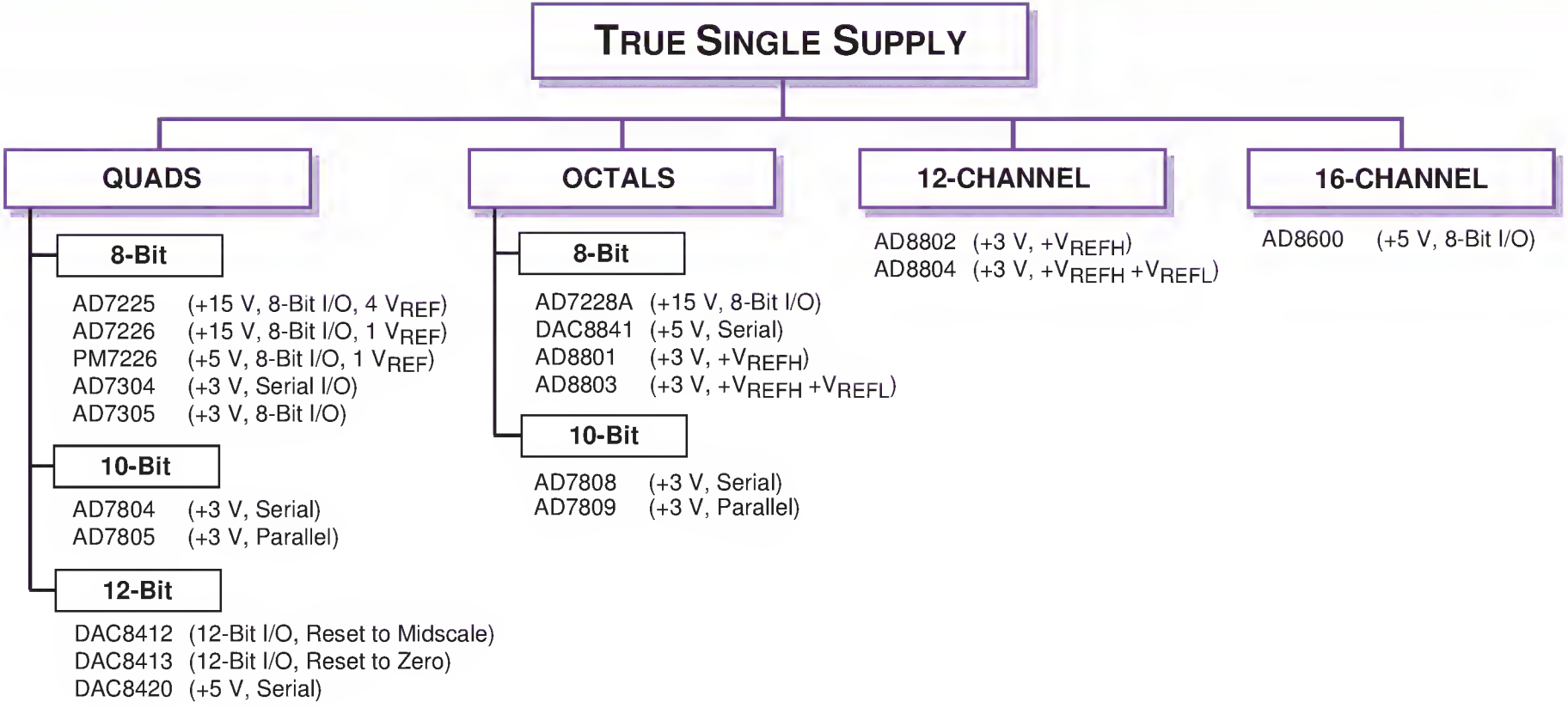
AD7302 (+2.7 V, 8-Bit I/O)
AD7303 (+2.7 V, Serial I/O)
DAC8228 (+12/15 V, 8-Bit I/O)

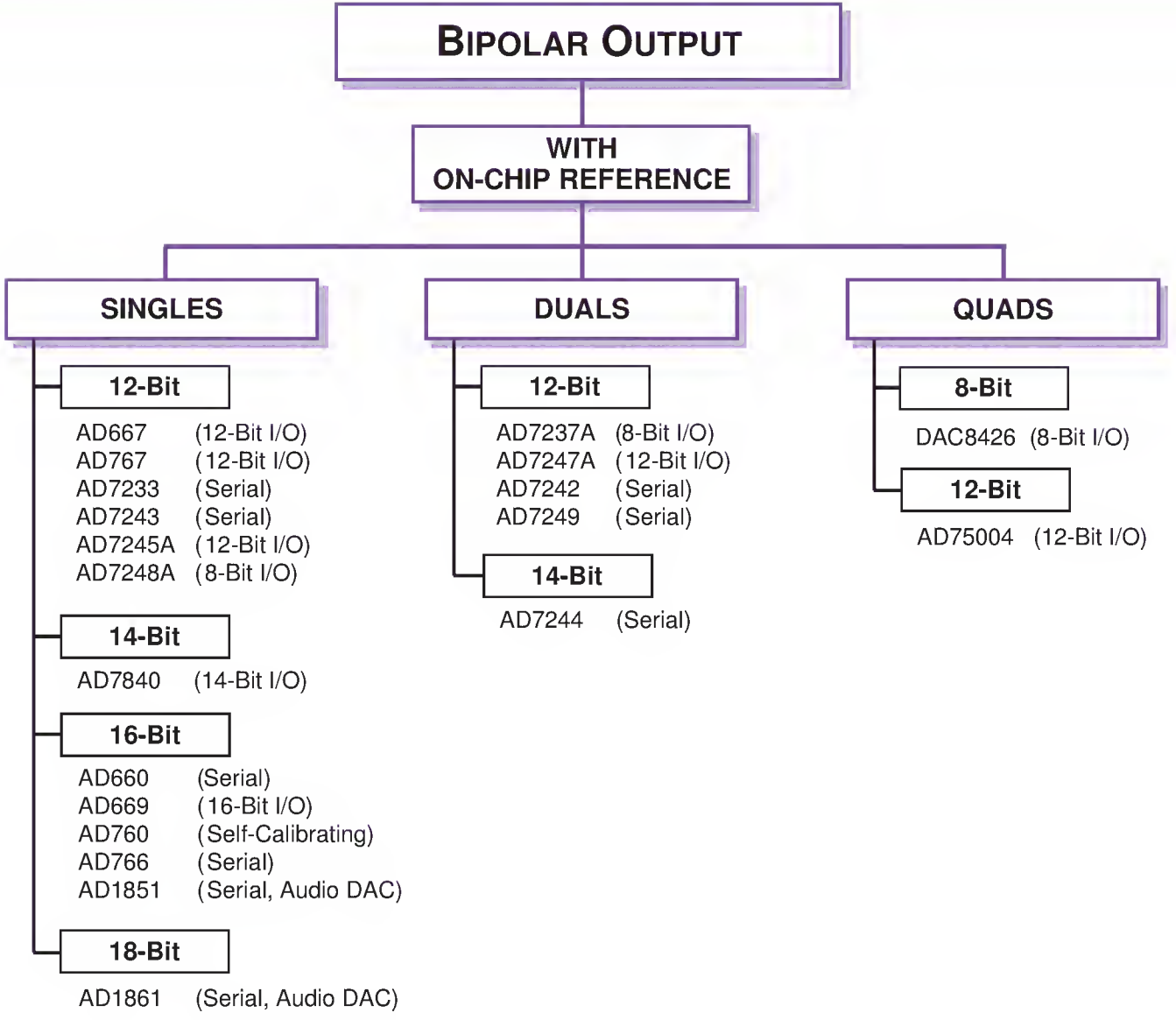
10-Bit

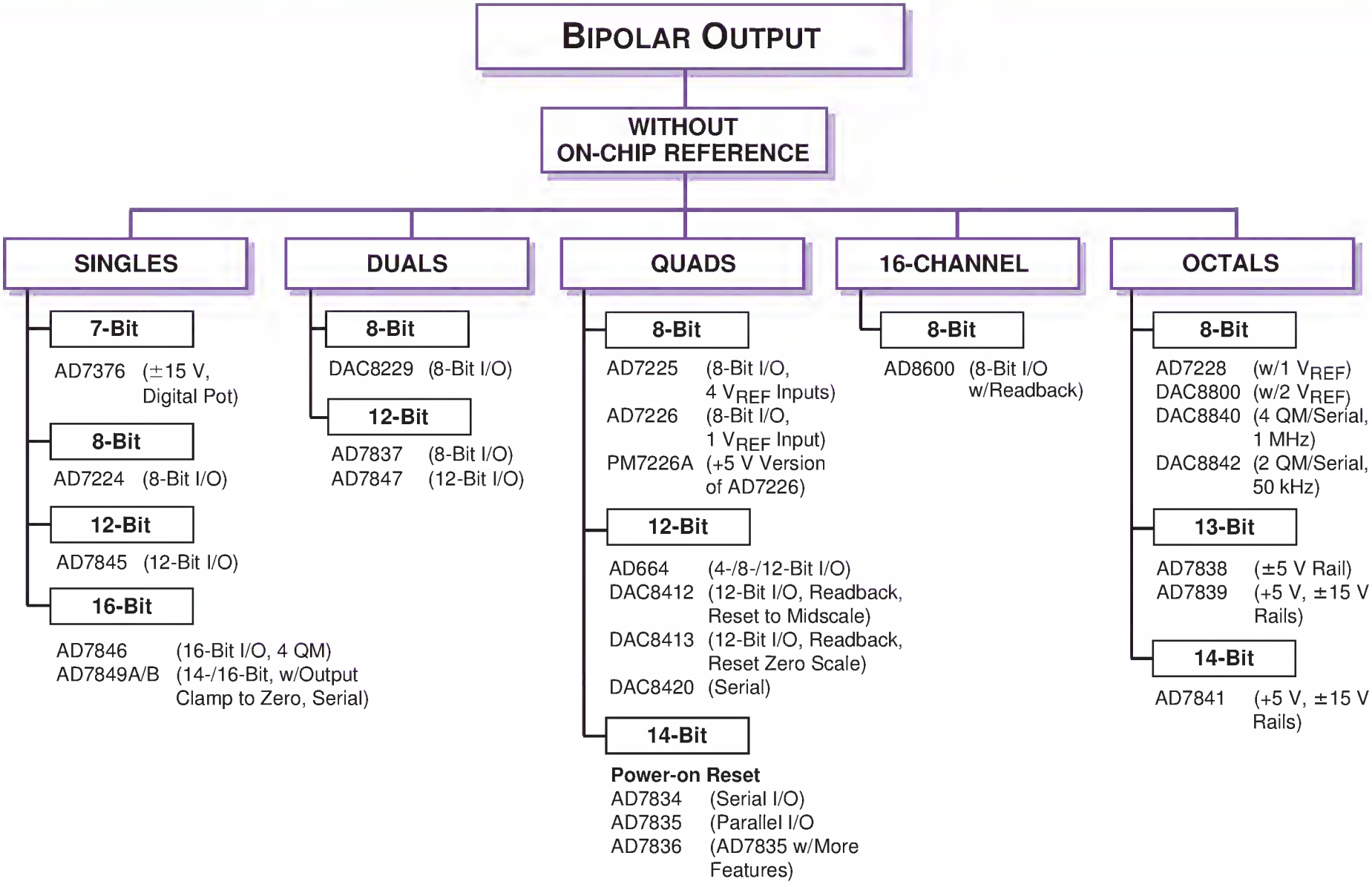
AD7395 (+2.7 V, I_Q = 200 µA, Serial)
AD7397 (+2.7 V, I_Q = 200 µA, 12-Bit I/O)

12-Bit

AD7237A (+15 V, 8-Bit I/O))
AD7247A (+15 V, 12-Bit I/O))
AD8522 (+5 V, Serial)
AD8582 (+5 V, Parallel)
AD7394 (+2.7 V, I_Q = 200 µA, Serial)
AD7396 (+2.7 V, I_Q = 200 µA, 12-Bit I/O)
AD8303 (+2.7 V, 10 mW)


TRUE SINGLE SUPPLY
QUADS
8-Bit
AD7225 (+15 V, 8-Bit I/O, 4 V_{REF})
AD7226 (+15 V, 8-Bit I/O, 1 V_{REF})
PM7226 (+5 V, 8-Bit I/O, 1 V_{REF})
AD7304 (+3 V, Serial I/O)
AD7305 (+3 V, 8-Bit I/O)
10-Bit
AD7804 (+3 V, Serial)
AD7805 (+3 V, Parallel)
12-Bit
DAC8412 (12-Bit I/O, Reset to Midscale)
DAC8413 (12-Bit I/O, Reset to Zero)
DAC8420 (+5 V, Serial)
OCTALS
8-Bit
AD7228A (+15 V, 8-Bit I/O)
DAC8841 (+5 V, Serial)
AD8801 (+3 V, +V_{REFH})
AD8803 (+3 V, +V_{REFH} +V_{REFL})
10-Bit
AD7808 (+3 V, Serial)
AD7809 (+3 V, Parallel)
12-CHANNEL
AD8802 (+3 V, +V_{REFH})
AD8804 (+3 V, +V_{REFH} +V_{REFL})
16-CHANNEL
AD8600 (+5 V, 8-Bit I/O)


BIPOLAR OUTPUT
WITH ON-CHIP REFERENCE
SINGLES
12-Bit
AD667 (12-Bit I/O)
AD767 (12-Bit I/O)
AD7233 (Serial)
AD7243 (Serial)
AD7245A (12-Bit I/O)
AD7248A (8-Bit I/O)
14-Bit
AD7840 (14-Bit I/O)
16-Bit
AD660 (Serial)
AD669 (16-Bit I/O)
AD760 (Self-Calibrating)
AD766 (Serial)
AD1851 (Serial, Audio DAC)
18-Bit
AD1861 (Serial, Audio DAC)
DUALS
12-Bit
AD7237A (8-Bit I/O)
AD7247A (12-Bit I/O)
AD7242 (Serial)
AD7249 (Serial)
14-Bit
AD7244 (Serial)
QUADS
8-Bit
DAC8426 (8-Bit I/O)
12-Bit
AD75004 (12-Bit I/O)


BIPOLAR OUTPUT
WITHOUT ON-CHIP REFERENCE
SINGLES
7-Bit
AD7376 (±15 V, Digital Pot)
8-Bit
AD7224 (8-Bit I/O)
12-Bit
AD7845 (12-Bit I/O)
16-Bit
AD7846 (16-Bit I/O, 4 QM)
AD7849A/B (14-/16-Bit, w/Output Clamp to Zero, Serial)
DUALS
8-Bit
DAC8229 (8-Bit I/O)
12-Bit
AD7837 (8-Bit I/O)
AD7847 (12-Bit I/O)
QUADS
8-Bit
AD7225 (8-Bit I/O, 4 VREF Inputs)
AD7226 (8-Bit I/O, 1 VREF Input)
PM7226A (+5 V Version of AD7226)
12-Bit
AD664 (4-/8-/12-Bit I/O)
DAC8412 (12-Bit I/O, Readback, Reset to Midscale)
DAC8413 (12-Bit I/O, Readback, Reset Zero Scale)
DAC8420 (Serial)
14-Bit
Power-on Reset
AD7834 (Serial I/O)
AD7835 (Parallel I/O
AD7836 (AD7835 w/More Features)
16-CHANNEL
8-Bit
AD8600 (8-Bit I/O w/Readback)
OCTALS
8-Bit
AD7228 (w/1 VREF)
DAC8800 (w/2 VREF)
DAC8840 (4 QM/Serial, 1 MHz)
DAC8842 (2 QM/Serial, 50 kHz)
13-Bit
AD7838 (±5 V Rail)
AD7839 (+5 V, ±15 V Rails)
14-Bit
AD7841 (+5 V, ±15 V Rails)

4-QUADRANT MULTIPLYING

SINGLES

8-Bit
AD7524 (8-Bit I/O)

10-Bit
AD7533 (No Latch)

12-Bit
12-Bit I/O
AD7945 (Fast I/O)
DAC8012 (w/Readback)
AD7845 (Voltage Output)*

8-Bit I/O
AD7948 (Fast I/O)

Serial I/O
AD7943 (9 MHz I/O)
DAC8043 (1 MHz BW)
DAC8043A (8 Lead TSSOP)
DAC8143 (Serial Output Pin)

14-Bit
AD7534 (8-Bit I/O)
AD7535 (8-/14 Bit I/O)
AD7836 (14-Bit I/O)*
AD7538 (14-Bit I/O)
AD7849 (Serial I/O, Power-on Reset)

16-Bit
AD7846
AD569

*Voltage switching ladder.

DUALS

8-Bit
AD7528 (Not TTL @ +15 V)
AD7628 (TTL @ +15 V)
PM7628 (+5 V)

12-Bit
Parallel I/O
AD7549 (4-Bit I/O)
AD7537 (8-Bit I/O)
AD7837 (8-Bit I/O)
DAC8248 (8-Bit I/O)
AD7547 (12-Bit I/O)
DAC8221 (12-Bit I/O)
DAC8222 (12-Bit I/O, w/Readback)
AD7847 (12-Bit I/O)

QUADS

8-Bit
DAC8408 (CMOS, 8-Bit I/O)

12-Bit
AD7564 (CMOS, Serial I/O)
AD664 (Bipolar, Byte/ 8/12 I/O)

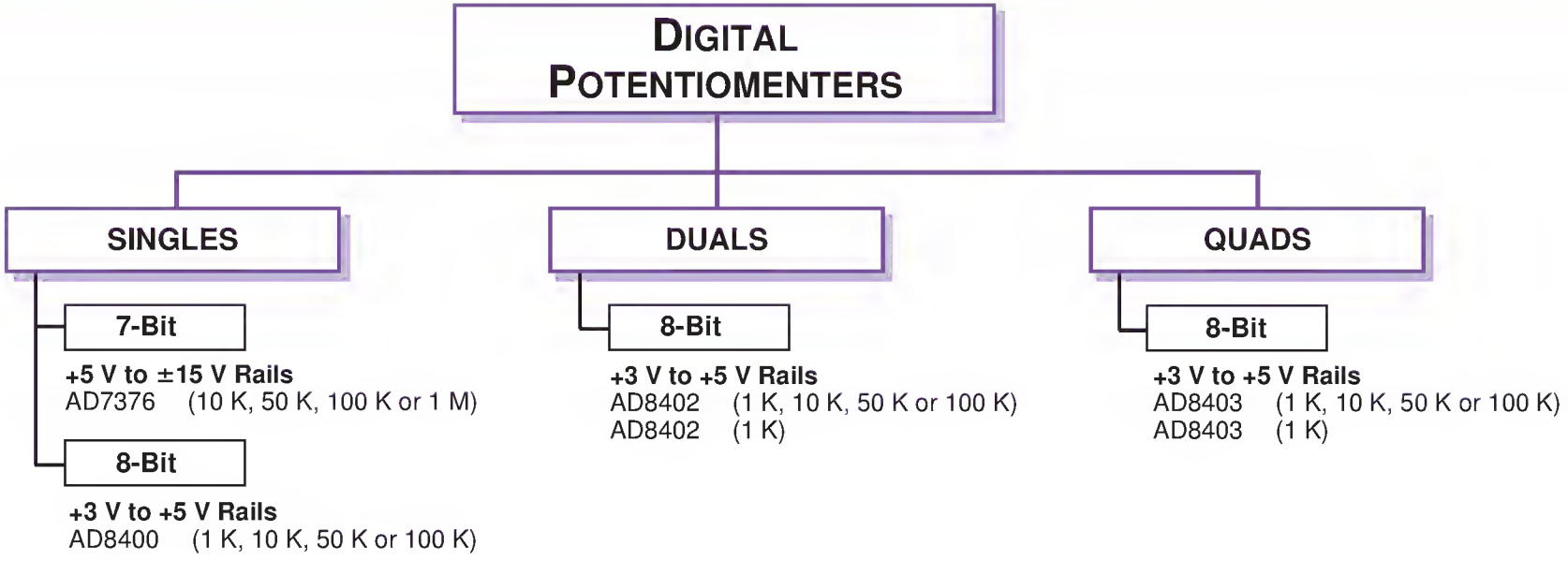
OCTALS

8-Bit
AD8840 (Serial I/O, Voltage Output)
DAC8842 (Serial I/O, Voltage Output)

12-Bit
AD7568 (CMOS, Serial I/O)

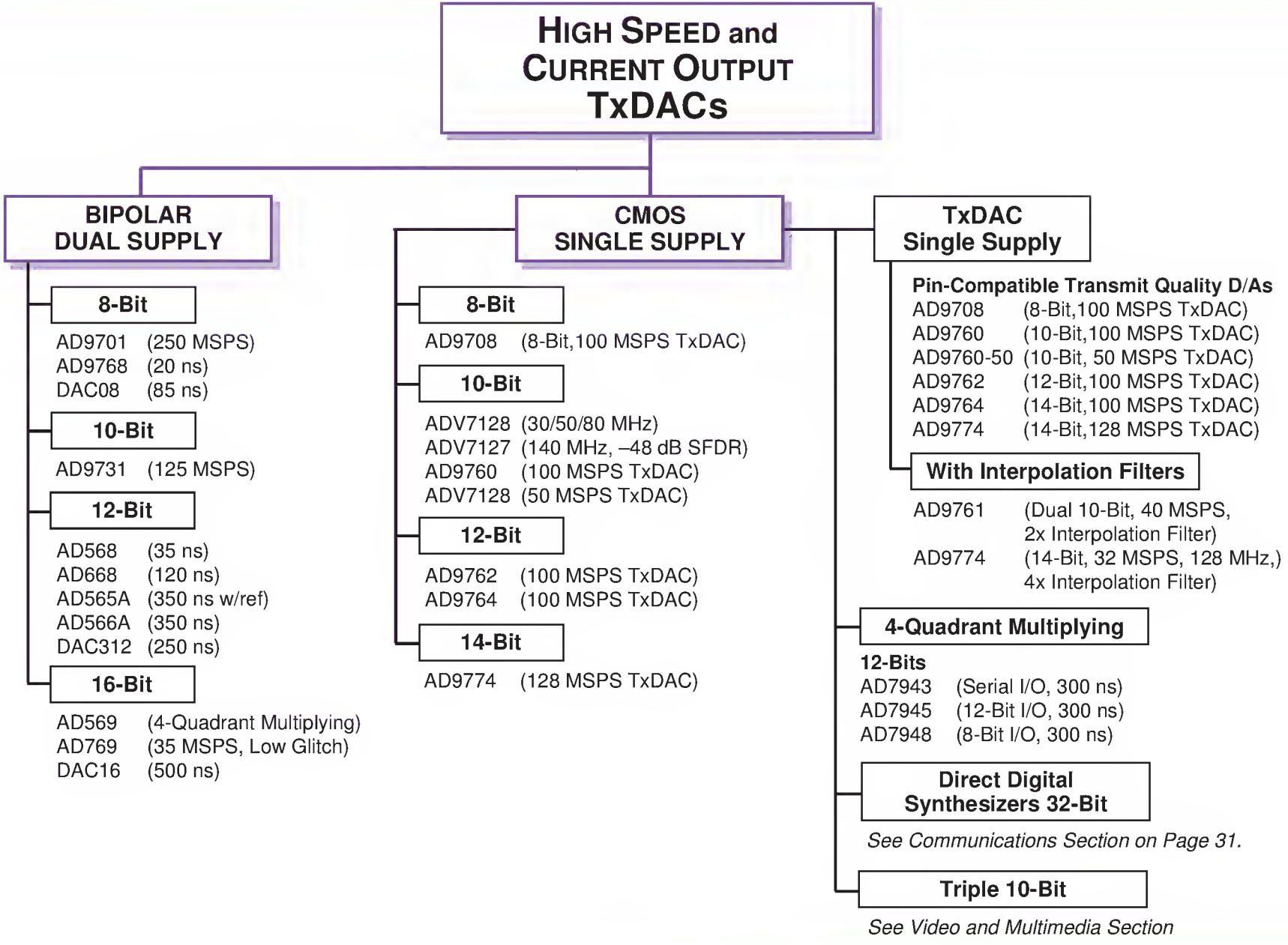
HEX

AD8600 (2Q Multiplying, Parallel)



*All Have Serial I/O

D/A Converters



FIXED-POINT

GENERAL PURPOSE

On-Chip Memory PM/DM/ROM[1]

	MIPS	
ADSP-2101	16.7/20/25	2 K/1 K/0 K
ADSP-2103[2]	10.2	2 K/1 K/0 K
ADSP-2104	13.82/20	1 K/0.5 K/0 K
ADSP-2105	13/20	1 K/0.5 K/0 K
ADSP-2111	16.7/20	2 K/1 K/0 K
ADSP-2115	13.8/16.7/20/25	1 K/0.5 K/0 K
ADSP-2171[3]	26/33	2 K/2 K/0 K
ADSP-2173[2]	20	2 K/2 K/0 K

ROM-BASED

On-Chip Memory PM/DM/ROM[1]

	MIPS	
ADSP-2109	13.82/20	0 K/0.5 K/4 K
ADSP-2161	16.7	0 K/0.5 K/8 K
ADSP-2162[2]	10.2	0 K/0.5 K/8 K
ADSP-2163	16.7	0 K/0.5 K/4 K
ADSP-2164[2]	10.2	0 K/0.5 K/4 K
ADSP-2165	20	1 K/4 K/12 K
ADSP-2166[2]	16.7	1 K/4 K/12 K

LARGE ON-CHIP MEMORY

On-Chip Memory PM/DM/ROM[1]

	MIPS	
ADSP-2187L[2]	29/40	32 K/32 K/0 K
ADSP-2185	29/33	16 K/16 K/0 K
ADSP-2185L[2]	29/33	16K/16 K/0 K
ADSP-2186	29/33	8 K/8 K/0 K
ADSP-2186L[2]	29.33	8 K/8 K/0 K
ADSP-2183[3]	33\40\52	16 K/16 K/0 K

WITH 16-BIT CODEC and HOST INTERFACE PORT

On-Chip Memory PM/DM/ROM[1]

	MIPS	
ADSP-21msp58	26	2 K/2 K/0 K
ADSP-2121msp59	26	2 K/2 K/4 K

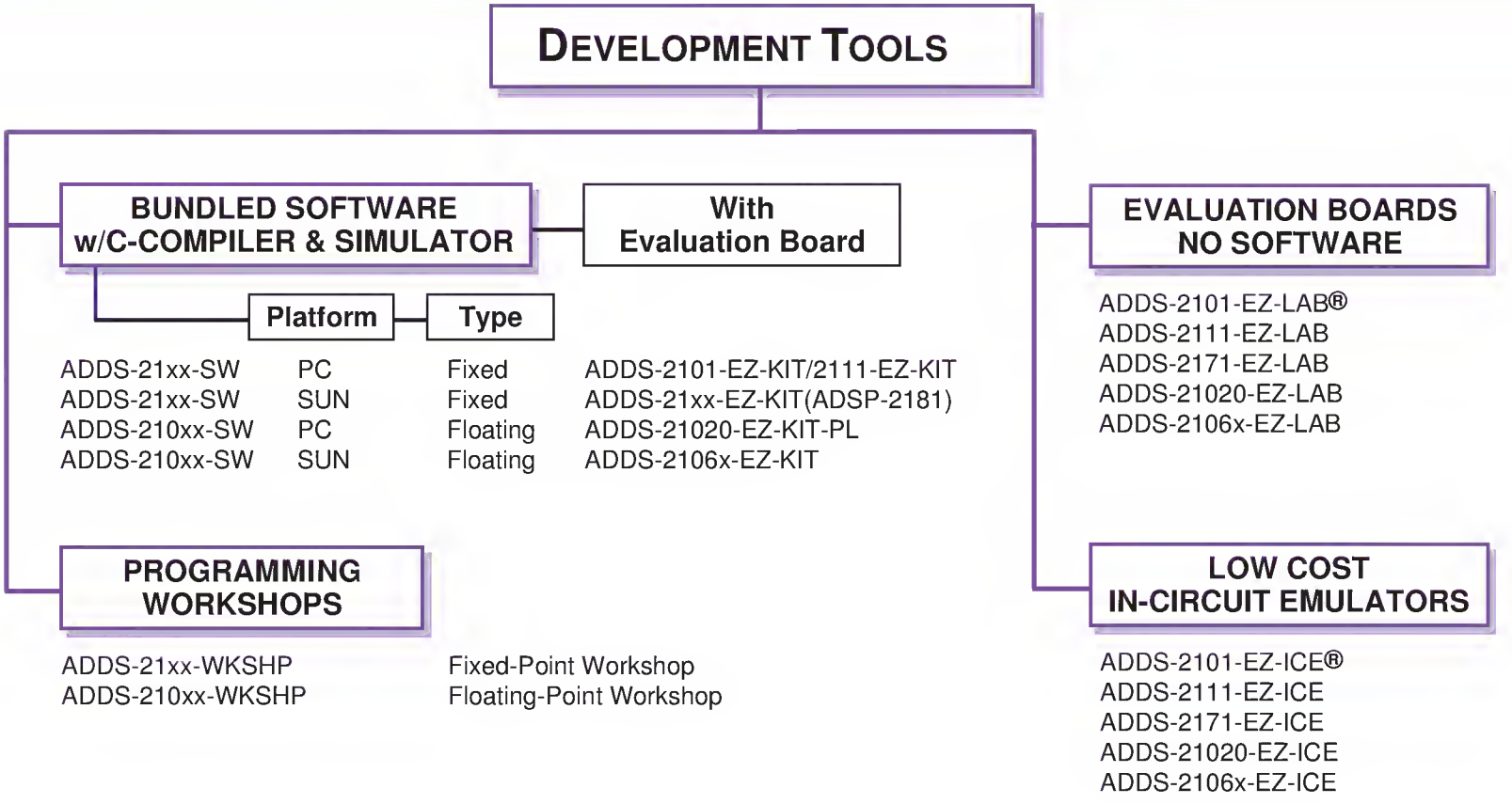
[1] PM/DM/ROM = Program RAM/Data RAM/Program ROM
[2] +3.3 V Operation
[3] Multiple Power-Down Modes

FLOATING-POINT

	Cycle Time ns	On-Chip Memory PM/DM[1]
ADSP-21020	25/40/50	0 K/0 K
ADSP-21060	25	2 Mbit/2 Mbit
ADSP-21061	25	0.5 Mbit/0.5 Mbit
ADSP-21061L	25	3 V Operation
ADSP-21062	25	1 Mbit/1 Mbit
ADSP-21062L	25	3 V Operation
AD14060	25	8 Mbit/8 Mbit

	QUAD ADSP-21060	On-Chip Memory PM/DM[1]
AD14160	480 MFlops	8 Mbit/8 Mbit
AD14160L	480 MFlops	8 Mbit/8 Mbit, 3 V Operational
AD14061	480 MFlops	8 Mbit/8 Mbit, 452 Lead Ball Grid Array
AD14061L	480 MFlops	8 Mbit/8 Mbit, 452 Lead Ball Grid Array. +3 V

[1]PM/DM = Program RAM/Data RAM



ADSP-21csp01: Compliers/Software/Evaluation Boards and Emulators Are Under Development.
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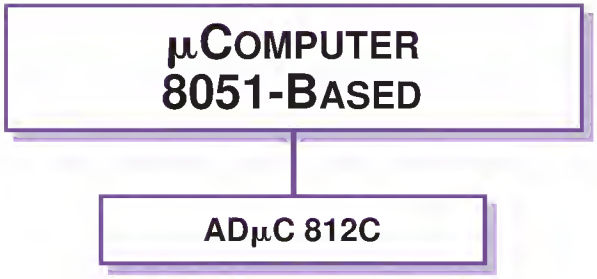


- 16 MHz Operation
  Analog I/O
    8-Ch, 200 kSPS, 12-Bit A/D

DIGITAL SIGNAL PROCESSING

CHIPSETS

GPS

ADSST-NAV2000 (8-Ch, SHARC-Based)
ADSST-NAV2100 (8-Ch, Fixed-Point-Based)

SPEECH COMPRESSION

ADSST-G.723.1
ADSST-G.728
ADSST-G.729

MPEG-I AUDIO

MPEG-I (Encode and Decode)
ADSST-MPEG-100 Series

MPEG-II AUDIO

ISO/IEC 13818-3 (Audio Std)
ADSST-MPEG-2000 (6-Ch Decoder)

ADSL

AD28msp910

NOISE/ECHO CANCELLATION

For Mobile Phones
AD20msp400HF

GSM BASEBAND

AD20msp410 (1st Generation)

REFERENCE DESIGNS

DIGITAL TELEPHONY

ADSST-DAM-1000 Series

VIDEO PHONE H.324 FOR POTS

Host-Based (ADSST-VC-3000)
ADSP21062 DSP-Based (ADSST-VC-2000

V.34 MODEM DATA PUMP

ADSSP-MOD 2000 (with AD1843)
ADSSP-MOD-2010

1 and 3 PHASE POWER METERS

ADSST-EM-1000 (Single Phase)
ADSST-EM-3000 (Three Phase)

SOUND/COM CONTROLLER

AD1821EZ-KIT Audio and Host-Based Modem (>>100 MHz)

LINE RECEIVERS and TRANSMITTERS

with 15 KV ESD HIGH EMI IMMUNITY

RS-232 Single Supply 0.1 µF Caps

500 kBPS

ADM202E (2D, 2R)
ADM207E (5D, 3R)
ADM208E (4D, 4R)
ADM211E (4D, 5R)
ADM213E (4D, 5R)
ADM1181A (2D, 2R)

RS-232 Dual Supply

ADM14185E (3D, 5R)
ADM14196E (5D, 3R)

RS-485

ADM483E (250 kHz)

LOW VOLTAGE ORIENTATION

3.3 Volts

RS-232 Single Supply, 0.1 µF Caps, 250 kBPS

ADM3202 2D, 2R
ADM3222 2D, 2R, 2R Active In S/Down Receivers Tri-Statable
ADM1385 (ADM3222, LTC1385 Pinout)

LINE RECEIVERS and TRANSMITTERS

RS-232

External Caps (1.0 µF) (Low Power)

Drivers (V_{CC} = +5 V)

ADM230L (5D)
ADM234L (4D)

Drivers/Receivers (V_{CC} = +5 V, 100 kBPS)

ADM232L (2D, 2R)
ADM236L (4D, 3R)
ADM237L (5D, 3R)
ADM238L (4D, 4R)
ADM241L (4D, 5R)
ADM223 (4D, 5R)

Drivers/Receivers (V_{CC} = +5 V & +12 V)

ADM231L (2D, 2R)
ADM239L (3D, 4R)

External Caps (0.1 µF) (Fast)

Drivers/Receivers (V_{CC} = +5 V, 200 kBPS)

ADM202 (2D, 2R)
ADM206 (4D, 3R)
ADM207 (5D, 3R)
ADM208 (4D, 4R)
ADM211 (4D, 5R)
ADM213 (4D, 5R)
ADM232A (2D, 2R)
ADM222 (w/Shutdown)
ADM242 (w/Shutdown and Enable)

Drivers/Receivers (V_{CC} = +5 V & +12 V)

ADM209 (3D, 4R)

Internal Capacitors (V_{CC} = +5 V)

ADM203 (2D, 2R; 120 kBPS)
ADM233L (3D, 4R; 100 kBPS)

PROGRAMMABLE RS-232 or RS-422

AD7306 2D, RS-232
1D, RS-422
2R, RS-232 and RS-422
1 (Selectable)
1R, RS-232, or 1R, RS-422

RS-232 & EIA-562

ADM560 (2 Receivers Active in Shutdown)
ADM561 (Receivers Disabled in Shutdown)

RS-232 or RS-423A

ADM5170 Octal Line Driver RS-232/RS-423 (Selectable)
ADM5180 Octal Diff. Receiver RS-232/RS-422A/RS-423A

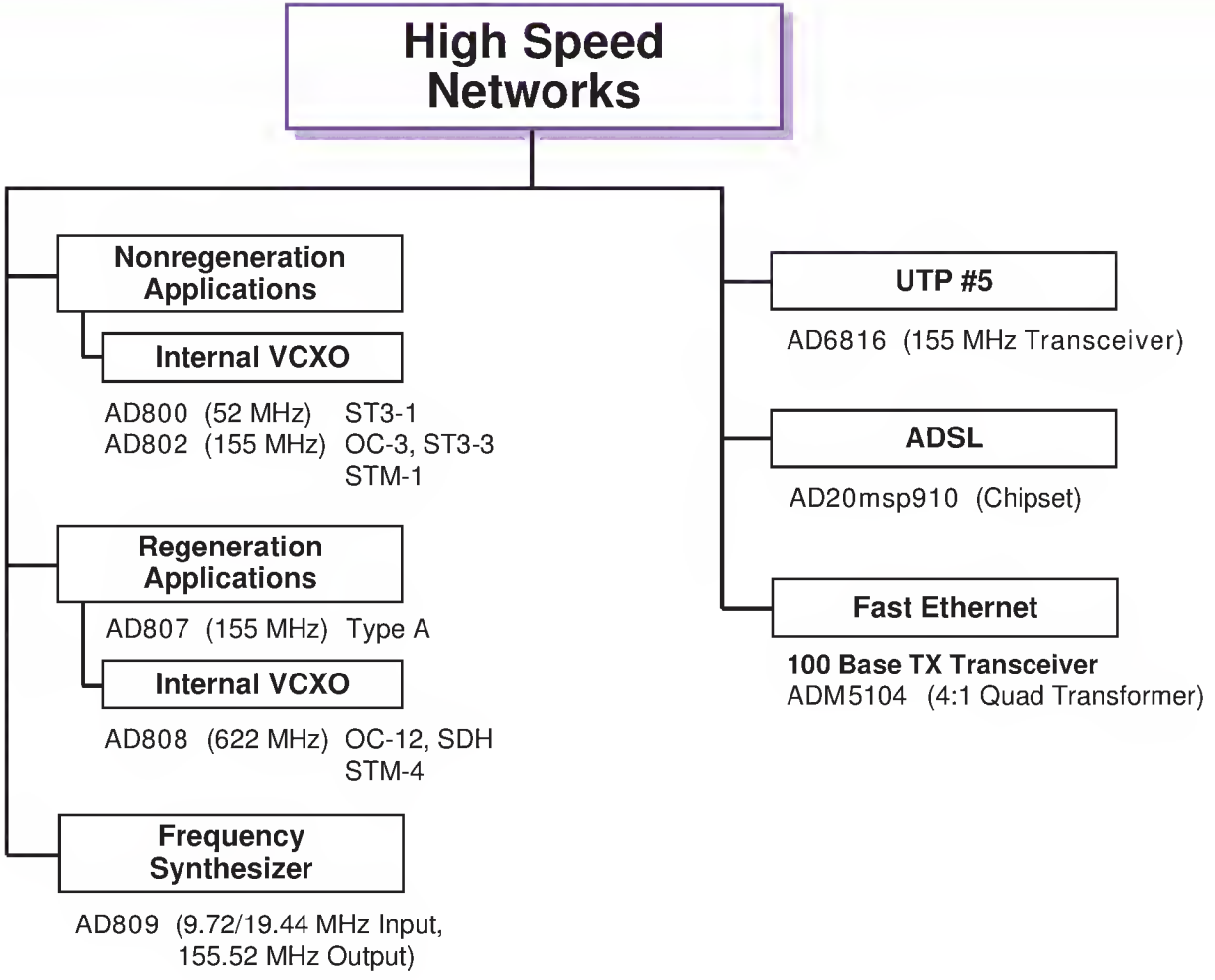
RS-485

ADM485/ADM1485 (5/30 MBPS)
ADM488 (Low Power, I_Q = 75 µA)
ADM489 (ADM488 w/Aux Enables)

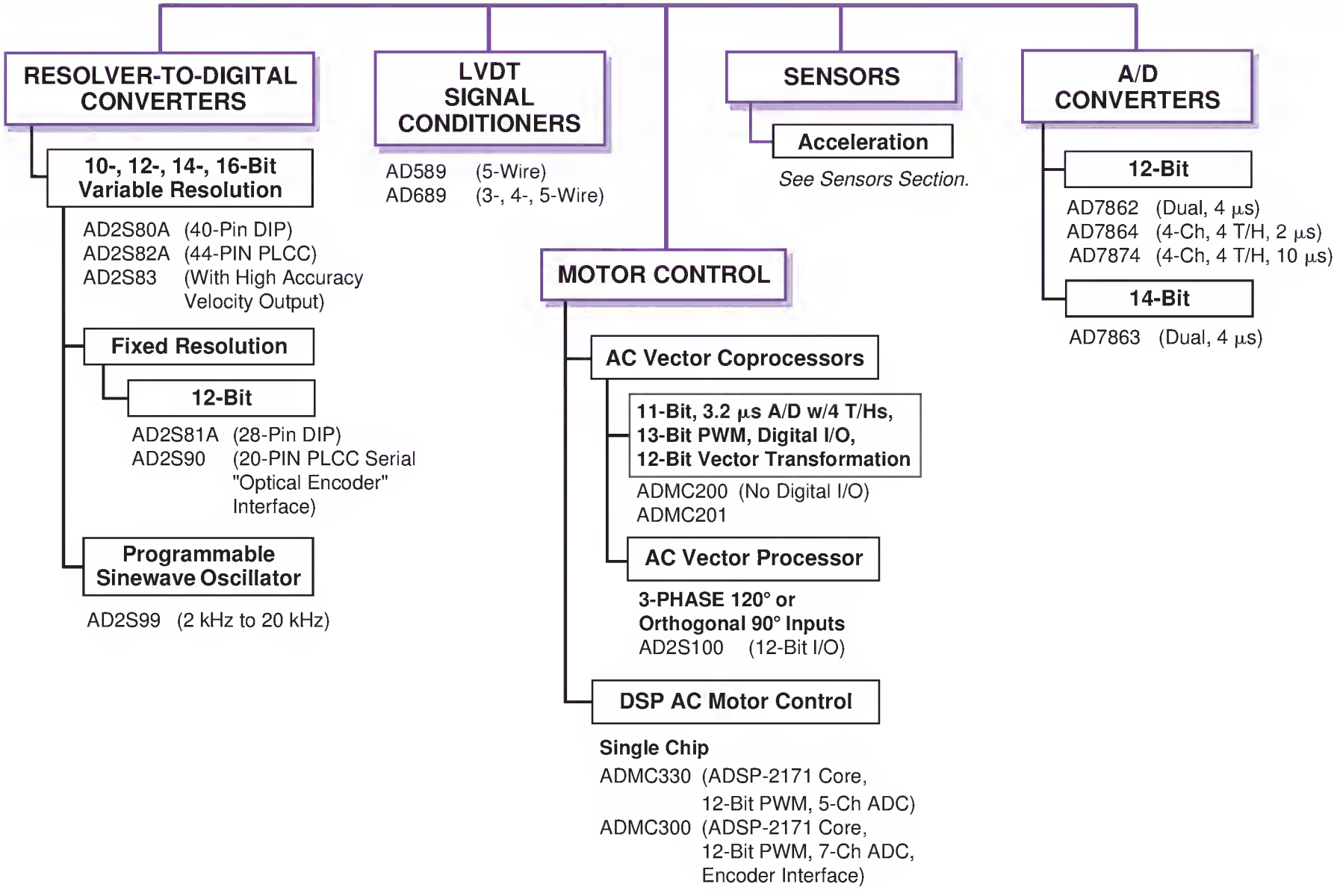
DCE or DTE V.35

External 1 µF Caps
ADM1345 (3D, 2R, 10 Mbaud)

LANS: Local/Wide Area Networks



MOTION CONTROL INTERFACE



MULTIPLEXERS

OVERVOLTAGE PROTECTED

CMOS

Single-Ended

8 Ch, 300 Ω
ADG508F
ADG438F (Low Leakage)

Single-Ended Latched

ADG528F (8-Ch, 300 Ω)

Single -Ended

4-Ch, 300 Ω
ADG509F
ADG439F (Low Leakage)

Channel Circuit Protectors

ADG465 (1-Ch, 80 Ω)
ADG466 (3-Ch, 80 Ω)
ADG467 (8-Ch, 80 Ω)

VIDEO BUFFERED

AD8170 (2-Ch, 250 MHz)
AD8174 (4-Ch, 250 MHz)
AD9300 (4-Ch, 34 MHz
0.1 dB @ 8 MHz)

VIDEO UNBUFFERED

AD8180 (2-Ch, 800 MHz)
AD8182 (Dual 2-Ch, 800 MHz)
AD8184 (4-Ch, 800 MHz)
ADG774 (Quad, 2-Ch, 110 MHz)

CMOS

Single-Ended

ADG408 (8-Ch, 100 Ω)
ADG508A (8-Ch, 300 Ω)
ADG406 (16-Ch, 100 Ω)

Differential

ADG409 (4-Ch, 100 Ω)
ADG509A (4-Ch, 300 Ω)
ADG407 (8-Ch, 100 Ω)

Single-Ended Latched

ADG428 (8-Ch, 100 Ω)
ADG528A (8-Ch, 300 Ω)
ADG426 (16-Ch, 100 Ω)
ADG426 (16-Ch, 300 Ω)

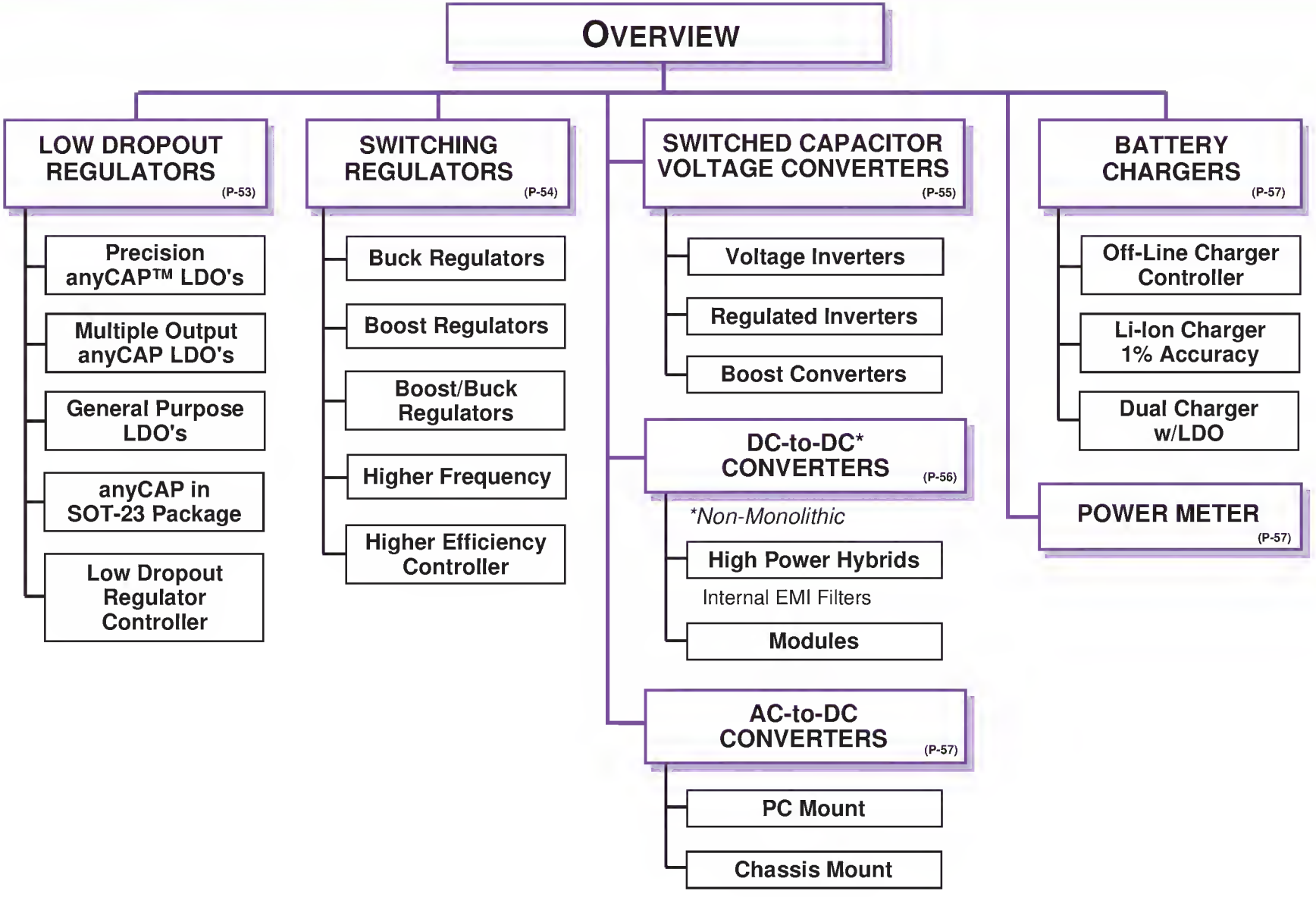
Differential Latched

ADG429 (4-Ch, 100 Ω)
ADG527A (8-Ch, 300 Ω)

+3 V Operation

ADG608 (8-Ch, 20 Ω)
ADG609 (Diff 4-Ch, 20 Ω)

POWER MANAGEMENT



anyCAP is a Trademark of Analog Devices, Inc.

LOW DROPOUT REGULATORS

PRECISION anyCAP-LDOs

ADP3300/ADP3308 (50 mA)
V_{IN}: +3 V to +16 V
V_{OUT}: +2.7 V, +3 V, +3.2 V, +3.3 V, +5 V
SOT-23: 6/5 Pins

ADP3301 (100 mA)
V_{IN}: +3 V to +12 V
V_{OUT}: +2.7 V, +3 V, +3.2 V, +3.3 V, +5 V
SO-8 Package

ADP3302 (100 mA)
V_{IN}: +3 V to +12 V
V_{OUT}: +3 V, +3.2 V, +3.3 V, +5 V
SO-8 Package

ADP3303 (200 mA)
V_{IN}: +3.2 V to +12 V
V_{OUT}: +2.7 V, +3 V, +3.2 V, +3.3 V, +5 V
SO-8 Package

ADP3306 (300 mA)
V_{IN}: +3.2 V to +12 V
V_{OUT}: +2.7 V, +3 V, +3.2 V, +3.3 V, +5 V
SO-8 and TSSOP Packages

ADP3307/ADP3309 (100 mA)
V_{IN}: +3 V to +12 V
V_{OUT}: +2.7 V, +3 V, +3.3 V
SOT-23: 6/5 Pins

MULTIPLE OUTPUT anyCAP-LDOs

ADP3302 (100 mA)
V_{IN}: +3 V to +12 V
V_{OUT}: +3 V, +3.2 V, +3.3 V, +5 V
SO-8 Package, Dual Error Flag

GENERAL PURPOSE LDOs

ADM663A (100 mA)
V_{IN}: +2 V to +16.5 V
V_{OUT}: +3.3 V, +5 V, Adj.
SO-8 Package

ADM666A (100 mA)
V_{IN}: +2 V to +16.5 V
V_{OUT}: 3.3 V, +5 V, Adj.
Low Battery Detection

ADP667 (200 mA)
V_{IN}: +3.5 V to +16.5 V
V_{OUT}: +5 V, Adj.
SO-8 Package

ADP3367 (300 mA)
V_{IN}: +2.5 V to +16.5 V
V_{OUT}: +5 V, Adj.
SO-8 Package

anyCAP in SOT-23 PACKAGE

ADP3300/ADP3308 (50 mA)
V_{IN}: +3 V to +16 V
V_{OUT}: +2.7 V, +3 V, +3.2 V, +3.3 V, +5 V
SOT-23: 6/5 Pins

ADP3307/ADP3309 (100 mA)
V_{IN}: +3 V to +12 V
V_{OUT}: +2.7 V, +3 V, +3.3 V
SOT-23: 6/5 Pins

LOW DROPOUT REGULATOR CONTROLLER

ADP3310 (I_Q: 800 mA)
V_{IN}: +2.5 V to +15 V
V_{OUT}: +2.8 V, +3 V, +3.3 V, +5 V
SO-8 Package

SWITCHING REGULATORS

BUCK REGULATORS

- ADP1073
  V_{IN}: +30 V
  V_{OUT}: +5 V, +12 V, Adj.
  I_Q = 95 µA
- ADP1108
  V_{IN}: +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 90 µA
- ADP1110
  V_{IN}: +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 300 µA
- ADP1111
  V_{IN}: +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 300 µA
- ADP1173
  V_{IN}: +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 110 µA
- ADP3000
  V_{IN}: +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  400 kHz, I_Q = 500 µA

BOOST REGULATORS

- ADP1073
  V_{IN}: +1 V to +12.6 V
  V_{OUT}: +5 V, +12 V, Adj.
  I_Q = 95 µA
- ADP1108
  V_{IN}: +2 V to +12.6 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 90 µA
- ADP1109/ADP1109A
  V_{IN}: +2 V to +9/12 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 320 µA
- ADP1110
  V_{IN}: +1.15 V to +12.6 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 300 µA
- ADP1111
  V_{IN}: +2 V to 12.6 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 300 µA
- ADP1173
  V_{IN}: +2 V to 12.6 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 110 µA
- ADP3000
  V_{IN}: +2 V to 12.6 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  400 kHz, I_Q = 500 µA

BOOST/BUCK REGULATORS

- ADP1073
  V_{IN}: +1 V to +30 V
  V_{OUT}: +5 V, +12 V, Adj.
  I_Q = 95 µA
- ADP1108
  V_{IN}: +2 V to +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 90 µA
- ADP1110
  V_{IN}: +1 V to +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 300 µA
- ADP1111
  V_{IN}: +2 V to +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 300 µA
- ADP1173
  V_{IN}: +2 V to +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  I_Q = 110 µA
- ADP3000
  V_{IN}: +2 V to +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  400 kHz, I_Q = 500 µA

HIGHER FREQUENCY

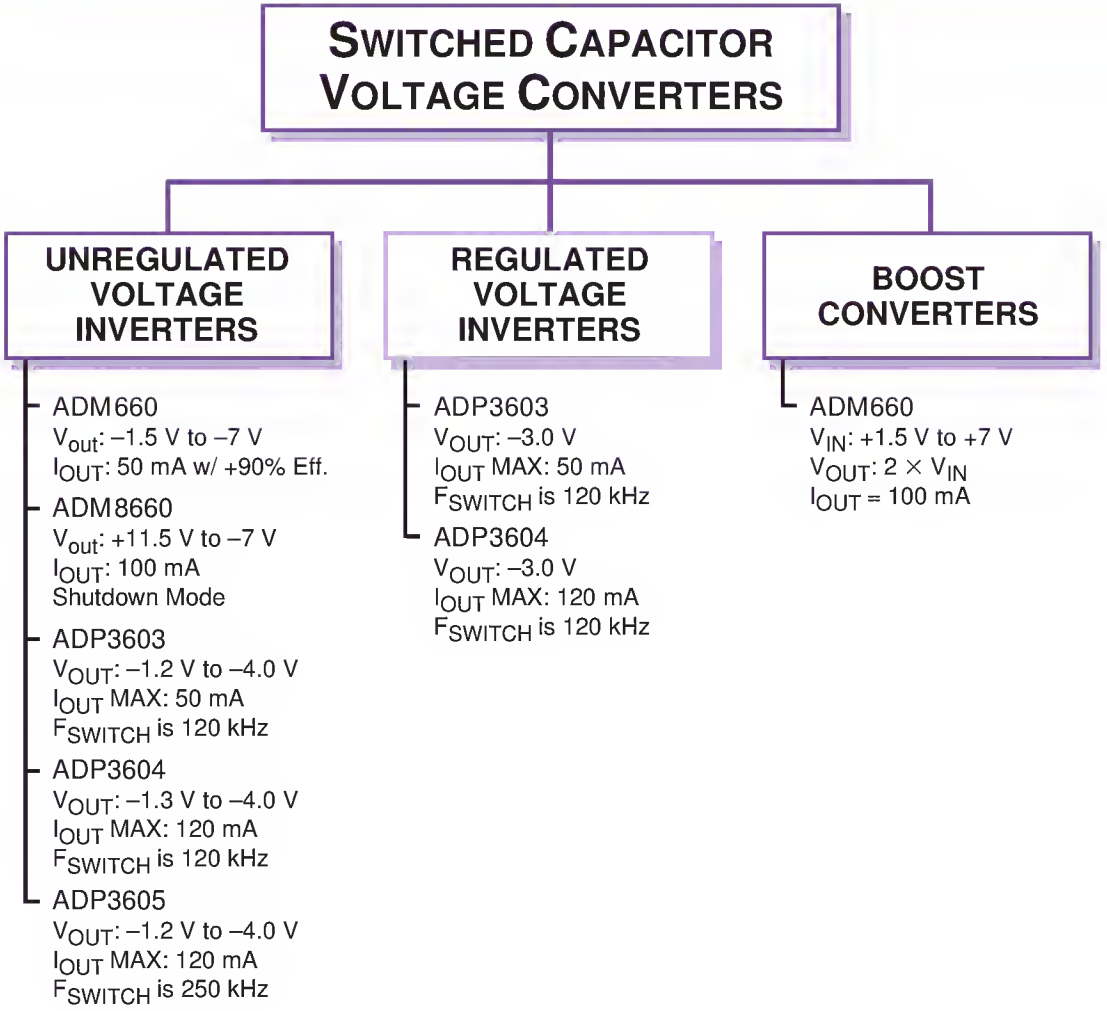
- ADP3000
  V_{IN}: +2 V to +30 V
  V_{OUT}: +3.3 V, +5 V, +12 V, Adj.
  400 kHz, I_Q = 500 µA

HIGH EFFICIENCY CONTROLLERS

- ADP1147
  V_{IN}: +3.5 V to +20 V
  V_{OUT}: +3.3 V, +5 V
  I_Q = 10 µA
  Sleep Mode, +95% Eff.
- ADP1148
  V_{IN}: +3.5 V to +18 V
  V_{OUT}: +3.3 V, +5 V, Adj.
  I_Q = 10 µA
  Syn Switch w/ >95% Eff.

5-Bit Progammable Synchronous Pentium Pro

- ADP3152
  V_{IN}: +5 V to +12 V
  V_{OUT}: Programmable
  +3.3 V to +5 V


SWITCHED CAPACITOR VOLTAGE CONVERTERS
UNREGULATED VOLTAGE INVERTERS
ADM660
Vout: –1.5 V to –7 V
IOUT: 50 mA w/ +90% Eff.
ADM8660
Vout: +11.5 V to –7 V
IOUT: 100 mA
Shutdown Mode
ADP3603
VOUT: –1.2 V to –4.0 V
IOUT MAX: 50 mA
FSWITCH is 120 kHz
ADP3604
VOUT: –1.3 V to –4.0 V
IOUT MAX: 120 mA
FSWITCH is 120 kHz
ADP3605
VOUT: –1.2 V to –4.0 V
IOUT MAX: 120 mA
FSWITCH is 250 kHz
REGULATED VOLTAGE INVERTERS
ADP3603
VOUT: –3.0 V
IOUT MAX: 50 mA
FSWITCH is 120 kHz
ADP3604
VOUT: –3.0 V
IOUT MAX: 120 mA
FSWITCH is 120 kHz
BOOST CONVERTERS
ADM660
VIN: +1.5 V to +7 V
VOUT: 2 × VIN
IOUT = 100 mA

DC-TO-DC* CONVERTERS

HIGH POWER HYBRIDS

V_{IN} = 16 to 50 V

ADDC02803SC	(V_{OUT} = +3 V @ 20 Amps)
ADDC02805SA	(V_{OUT} = +5 V @ 20 Amps)
ADDC02808PB	(V_{OUT} = +8 V @ 25 Amps Pulsed)
ADDC02809SA	(V_{OUT} = +9 V @ 11.1 Amps)
ADDC02812DA	(V_{OUT} = ±12 V @ 8.34 Amps Total)
ADDC02815DA	(V_{OUT} = ±15 V @ 6.68 Amps Total)
ADDC02828SA	(V_{OUT} = +28 V @ 3.6 Amps)

V_{IN} = 160 to 400 V

ADDC27005SA	(V_{OUT} = +5 V @ 20 Amps)
ADDC27008PB	(V_{OUT} = +8 V @ 20 Amps Pulsed)

MODULES

PC Mount

+5 V Input

958	(+5 V @ 100 mA)
960	(±12 V @ 40 mA)
941	(±12 V @ 150 mA)
962	(±15 V @ 38 mA)
949	(±15 V @ 60 mA)
940	(±15 V @ 150 mA)

+12 V Input

966	(±15 V @ 190 mA)

*Non-Monolithic Circuits

POWER MANAGEMENT

AC-to-DC CONVERTERS*

PC Mount

902-2 (+15 V @ 100 mA)
920 (+15 V @ 200 mA)
925 (+15 V @ 350 mA)
923 (+15 V @ 100 mA & +5 V @ 500 mA)

Chassis Mount

970 (+15 V @ 200 mA)
975 (+15 V @ 500 mA)
955 (+5 V @ 1 A)
977 (+5 V @ 5 A)

BATTERY CHARGERS

Off-Line Charger Controller

- ADP3810 Li-Ion, 1-4 Cells
- ADP3811 NiCad & NiMH, Ext. Set

Li-Ion Charger 1% Accuracy

- ADP3810 Li-Ion, 1-4 Cells
- ADP3800 Li-Ion, NiCad & NiMH Switch Mode, 100 kHz
- ADP3801 Li-Ion, NiCad & NiMH Switch Mode, 200 kHz
- ADP3802 Li-Ion, NiCad & NiMH Switch Mode, 500 kHz

Dual Charger with LDO

- ADP3810 Li-Ion, NiCad & NiMH Switch Mode, 100 kHz
- ADP3801 Li-Ion, NiCad & NiMH Switch Mode, 200 kHz
- ADP3802 Li-Ion, NiCad & NiMH Switch Mode, 500 kHz

POWER METER

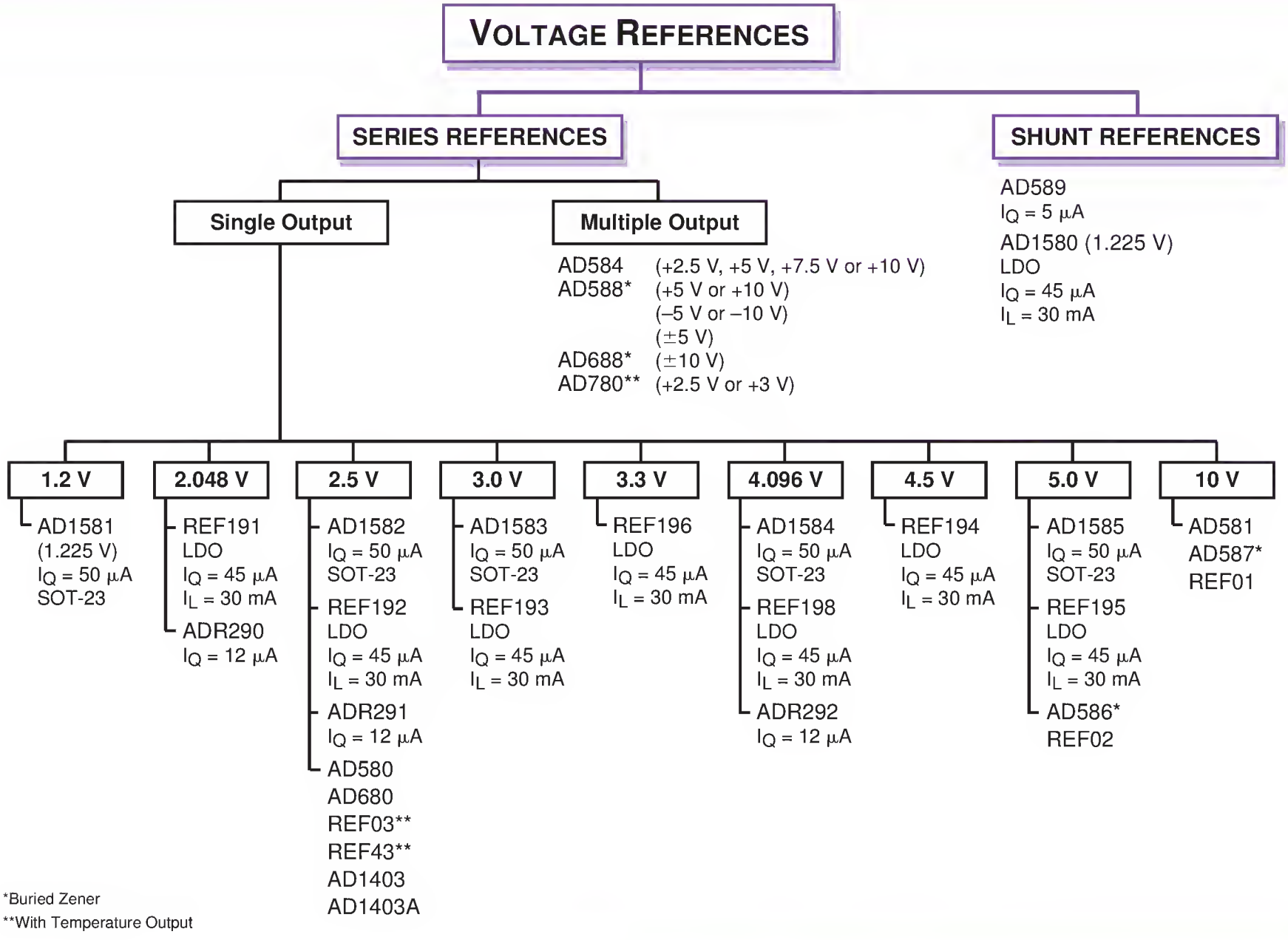
Product to Frequency Converter

AD7750 (V/F Output f = 1.53 or 98.31 Hz, +5 V)
AD7751 (AD7750 w/Anti-Filtering)
AD7752 (AD7751 w/SPI I/O)

BATTERY BACKUP

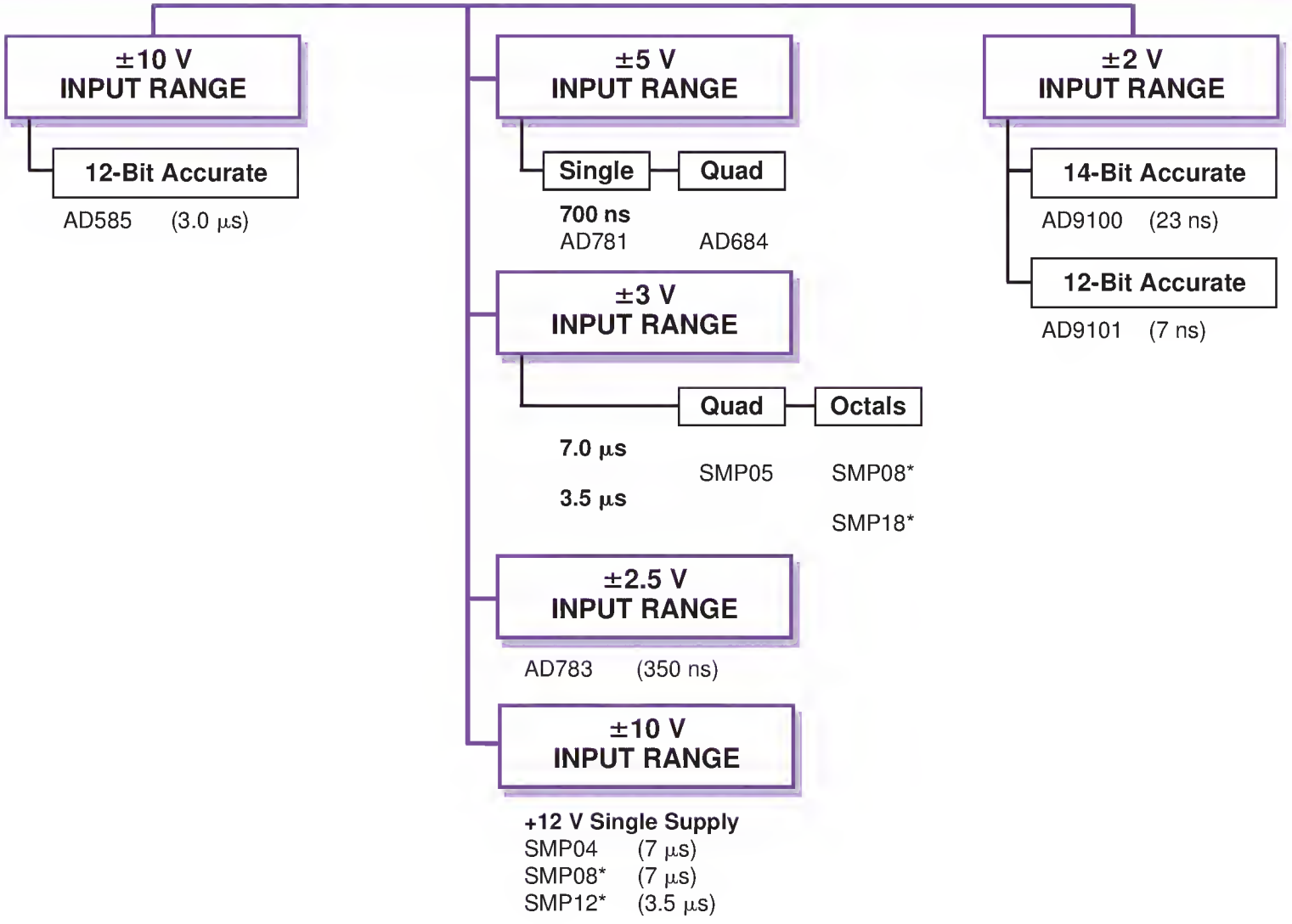
See μProcessor Supervisory Circuits & Reset Generators Section.

*Input Voltage 105 V AC to 125 V AC



*Buried Zener
**With Temperature Output

SAMPLE/TRACK & HOLD AMPLIFIERS



*One Input, Eight Outputs

SENSORS & SIGNAL CONDITIONERS

SENSORS

ACCELERATION

Single Axis

ADXL05	(±5 *g*, 5 m*g* Resolution)
ADXL50	(±50 *g*, 5 m*g* Resolution)
ADXL181	(±5 *g*, ±50 *g*, 1 m*g* Resolution)

Dual Axis

ADXL250	(±5 *g* or ±50 m*g*, 1 m*g* Resolution)

Evaluation Modules

See Selection Guides.

CURRENT

AD22001	(Light Bulb Monitor, 5 Bulbs)

MAGNETIC

AD22151	(Prgm Gain 2.0 mV/G to 6 mV/G)

TEMPERATURE

Current Output

AD590	(1 µA/°K [TO-52])
AD592	(1 µA/°K [TO-92])
TMP17	(1 µA/°K [SOIC-8])
ADT18	(2 µA/°K [SOT-23])
ADT19	(5 µA/°K [SOT-23])

Ratiometric Output

AD22100	(22.5 mV/°C, +5 V Supply)
AD22103	(28 mV/°C, +3 V Supply)

Voltage Output

AD22104	(28 mV/°C, +3 V Supply)
TMP3x Series	(w Shutdown)
TMP35	(V_{OUT} = 250 mV,10 mV/°C)
TMP36	(V_{OUT} = 750 mV,10 mV/°C)
TMP37	(V_{OUT} = 500 mV, 20 mV/°C)
ADT45	(V_{OUT} = 250 mV,10 mV/°C, SOT-23-3)
ADT50	(V_{OUT} = 750 mV,10 mV/°C, SOT-23-3)

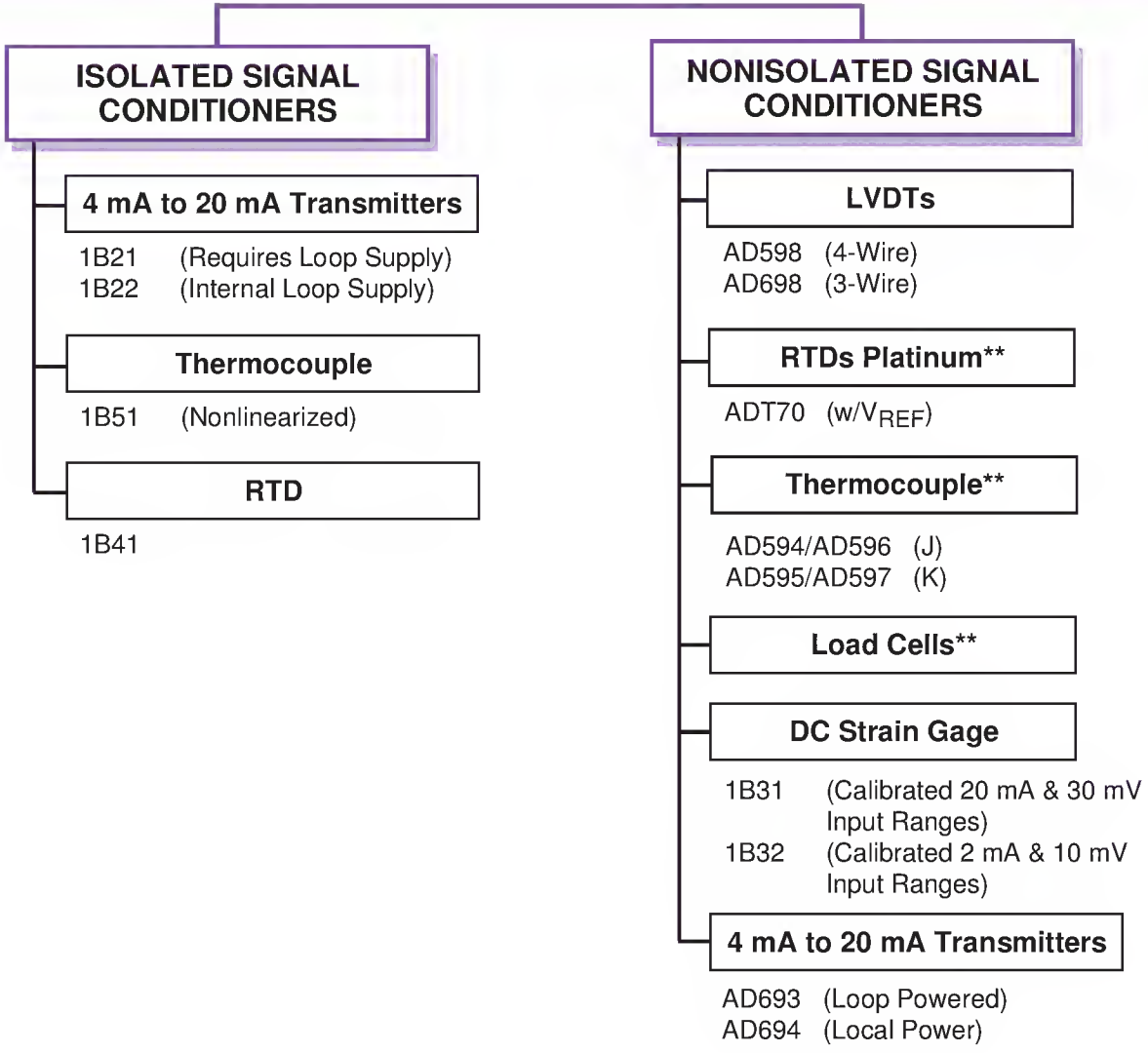
Digital Output

AD7416	(10-Bit A/D Output, 1^2C I/O)
AD7816	(10-Bit A/D Output, SPI I/O)
TMP03	(PWM, Open Collector)
TMP04	(PWM, TTL/CMOS)

TEMPERATURE CONTROLLERS

TMP01	(°F/°C w/Window Comparator)
TMP12	(w/Window Comparator, "Heater" Input)
AD594/AD596	(J Thermocouple)
AD595/AD597	(K Thermocouple)
AD22105	(Programmable –40°C to +125°C, 1 Output)
ADT05	(Programmable –40°C to +125°C, 1 Output, SOT-23-5)
ADT10	(Programmable –40°C to +125°C, 1 Output, w/VPTAT Output)
ADT14	(Programmable –40°C to +125°C, 4 Outputs, w/VPTAT Output)

SENSORS & SIGNAL CONDITIONERS*



*See Industrial Catalog for 2B, 3B, 4B, 5B, 6B and 7B Series of Signal Conditioners

**See A/D Section, Sigma-Delta, for Signal Conditioning A/Ds.

SWITCHES

OVERVOLTAGE PROTECTED

CMOS

4 SPST/4 SPST Latched

AD7510DI
AD7511DI

2 SPST/2 SPST Latched

AD7512DI

Channel Protectors

See Analog MUX Section

LOW VOLTAGE

Low Power ±15 V or +5 V Rails

4 SPST

ADG451, ADG452, ADG453	(5Ω)
ADG312, ADG313	(10Ω)
ADG431, ADG432	(27Ω)
ADG411, ADG412, ADG413	(35Ω)

4 SPST

ADG333A (35Ω)

2 SPST

ADG436 (15Ω)

1 SPST

ADG419

1 SPST

ADG417

Low Power ±15 V

4 SPST

ADG441/442/444

+3 V Rail

4 SPST

ADG511/512/514 (50Ω)

CMOS SWITCHES ±15 V & +5 V RAILS

4 SPST

ADG5201HS	(50Ω)
ADG5201A/202A	(90Ω)
ADG211A/212A	(115Ω)

CMOS SWITCHES ±15 V RAILS

4 SPST

ADG211/222

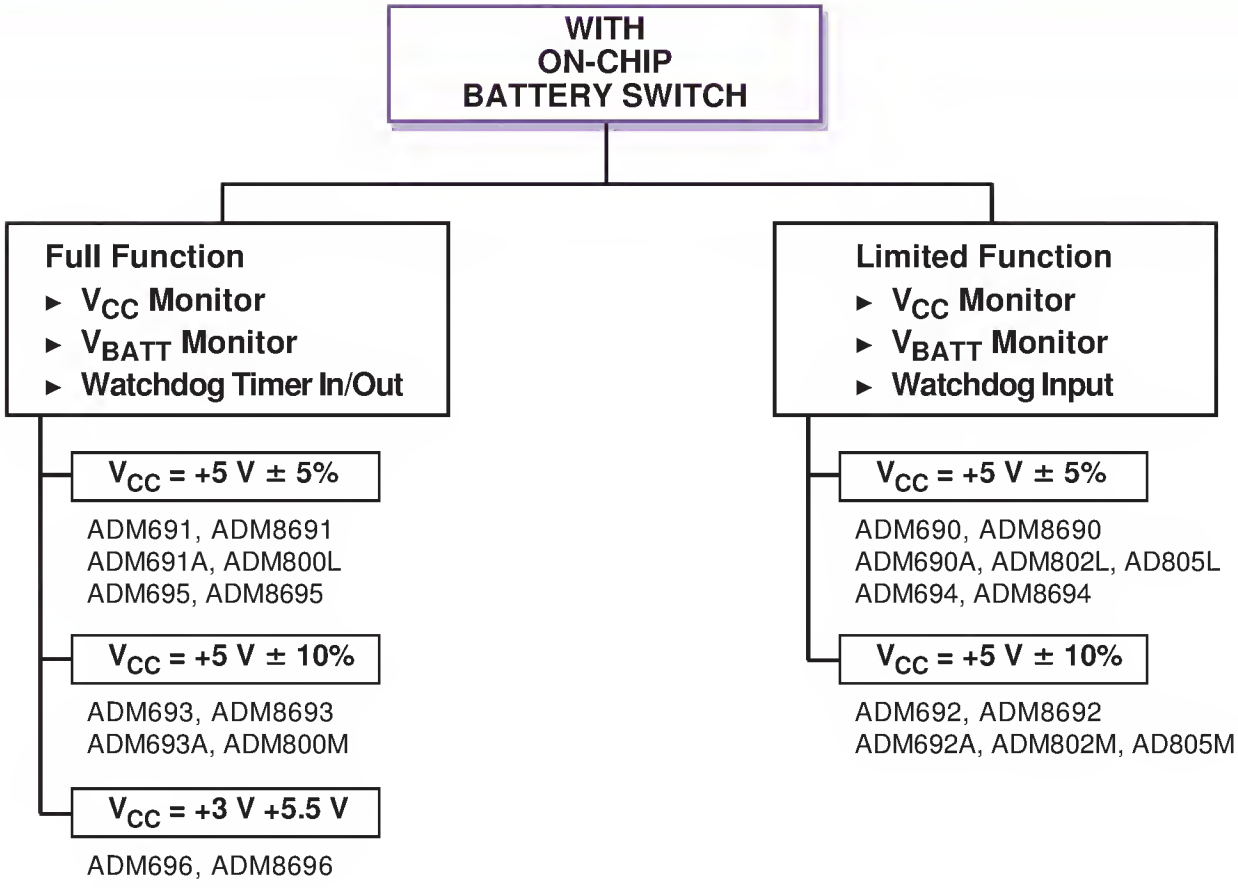
CROSSPOINT SWITCHES

AD75019	(Audio, 20 kHz, 16 × 16, A_V = 1)
AD8116	(Video, 200 MHz, 16 × 16, A_V = 1)
AD8108	(Video, 325 MHz, 8 × 8, A_V = 1)
AD8109	(Video, 200 MHz, 8 × 8, A_V = 2)
AD8110	(Video, 300 Mz, 16 × 8, A_V = 1)
AD8111	(Video, 190 Mz, 16 × 8, A_V = 2)

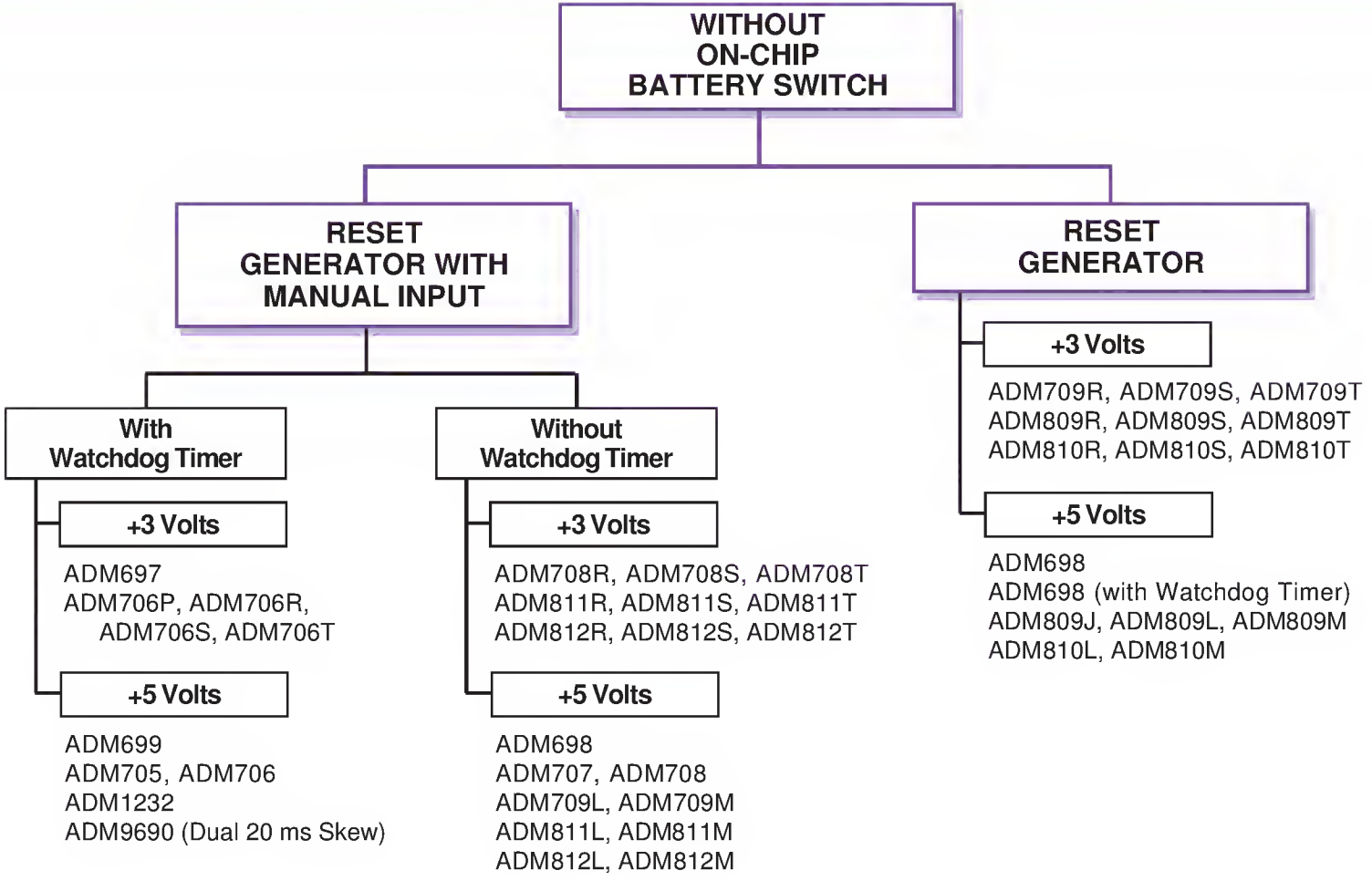
AUDIO "CLICKLESS"

SSM2402 (2 SPST)/SSM2412
SSM2404 (4 SPST)

*ADGxxx/xxx/xxx = 4 Normally Closed/4 Normally Open/ 2 Normally Open/2 Normally Closed.


WITH
ON-CHIP
BATTERY SWITCH
Full Function
► V_{CC} Monitor
► V_{BATT} Monitor
► Watchdog Timer In/Out
V_{CC} = +5 V ± 5%
ADM691, ADM8691
ADM691A, ADM800L
ADM695, ADM8695
V_{CC} = +5 V ± 10%
ADM693, ADM8693
ADM693A, ADM800M
V_{CC} = +3 V +5.5 V
ADM696, ADM8696
Limited Function
► V_{CC} Monitor
► V_{BATT} Monitor
► Watchdog Input
V_{CC} = +5 V ± 5%
ADM690, ADM8690
ADM690A, ADM802L, AD805L
ADM694, ADM8694
V_{CC} = +5 V ± 10%
ADM692, ADM8692
ADM692A, ADM802M, AD805M

µPROCESSOR SUPERVISORY CIRCUITS & RESET GENERATORS



FUNCTION TABLE

With On-Chip V_{BATT} Switch

Circuit Functions	ADM8690 ADM690	ADM8691 ADM691	ADM8692 ADM692	ADM8693 ADM693	ADM8694 ADM694	ADM8995 ADM695	ADM8696 ADM696	ADM805L ADM802L ADM690A	ADM800L ADM691A	ADM805M ADM802M ADM692A	ADM800M ADM693A
Fixed Power Up/Down Reset	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Variable Power Up/Down Reset							✓				
Watchdog Timer Input	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Watchdog Timer Output		✓		✓		✓	✓		✓		✓
Power Failing Warning In/Out	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reset & $\overline{\text{Reset}}$ Outputs		✓		✓		✓	✓		✓		✓
+3 V Systems											
$\overline{\text{CE}}$ In & $\overline{\text{CE}}$ Out		✓		✓	✓	✓			✓		✓
Reset & Watchdog Timebase		✓		✓		✓	✓		✓		✓
# of Pins	8	16	8	16	8	16	16	8	16	8	16
Low I_Q = 100 µA								✓	✓	✓	✓
$\overline{\text{Low Line}}$ Output		✓		✓		✓	✓		✓		✓

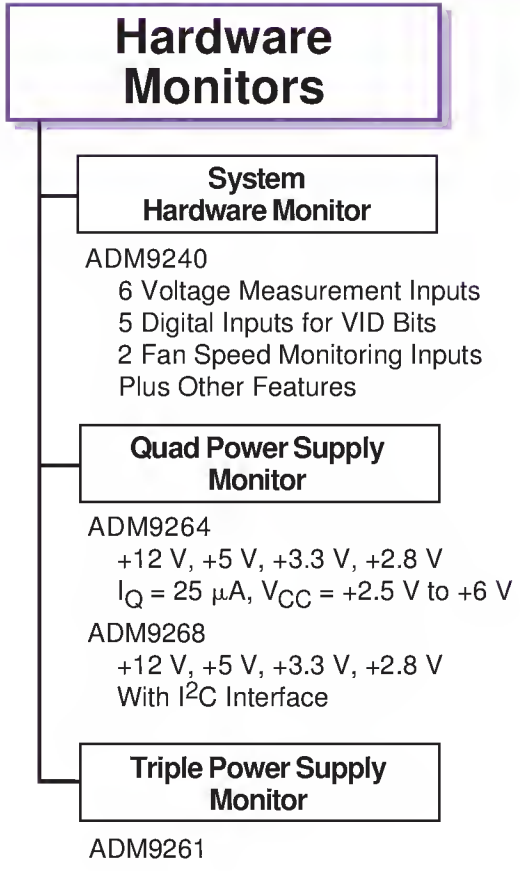
*SOT-23-3 Leads

FUNCTION TABLE

Without On-Chip V_{BATT} Switch

Circuit Functions	ADM8697 ADM697	ADM698	ADM699	ADM705	ADM706	ADM707	ADM708	ADM810* ADM809* ADM709	ADM9680	ADM1232 ADM1232LP	ADM811 ADM812
Fixed Power Up/Down Reset	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Variable Power Up/Down Reset	✓										
Low Line Output	✓										
Watchdog Timer Input	✓		✓	✓	✓				✓	✓	✓
Watchdog Timer Output	✓		✓	✓	✓						
Power Failing Warning In/Out	✓			✓	✓	✓	✓				
Reset & Watchdog Timebase	✓			✓	✓				✓		
Manual Reset				✓	✓	✓	✓			✓	✓
+3 V Systems	✓				P, R, S, T		R, S, T	R, S, T			R, S, T
$\overline{CE}$ Out	✓										
# of Pins	16	8/16	16	8	8	8	8	3/8	8	8/16	4
Reset & $\overline{Reset}$ Outputs			✓			✓			✓		

*SOT-23-3 Leads


Hardware Monitors
System Hardware Monitor
ADM9240
6 Voltage Measurement Inputs
5 Digital Inputs for VID Bits
2 Fan Speed Monitoring Inputs
Plus Other Features
Quad Power Supply Monitor
ADM9264
+12 V, +5 V, +3.3 V, +2.8 V
I_Q = 25 µA, V_{CC} = +2.5 V to +6 V
ADM9268
+12 V, +5 V, +3.3 V, +2.8 V
With I^2C Interface
Triple Power Supply Monitor
ADM9261

VIDEO AND MULTIMEDIA

VIDEO COMPRESSION and DECOMPRESSION

ADV601 (Real Time 350:1 Ratio)
ADV601LC (Low Cost ADV601)

RGB to NTSC/PAL

AD722 (W/Sub Carrier Clk)
AD724 (Improved AD722)

A/Ds and D/As MULTIMEDIAS

See Analog and Digital Audio Section.

DIGITAL CCIR 601/605 4:2:2 or D1 YUV to NTSC/PAL

8/16-Bit Video D/As @ 27 MHz

With Anti-Taping Macrovision
ADV7175 (4-, 10-Bit)
ADV7175A (4-, 10-Bit)
ADV7178 (3-, 9-Bit,13.5 MHz Clk Support)

Without Anti-Taping Macrovision
ADV7173 (4-, 10-Bit, w/On-Screen Display)
ADV7177 (3-, 9-Bit, w/On-Screen Display)

VIDEO GRAPHICS

PC GRAPHICS RAM DACs

8-Bit

ADV473
ADV478

Workstation Graphics

10-Bit

ADV7150 (True Color)
ADV7151 (Pseudo Color)
ADV7152 (True Color)

10-Bit w/ Hardware Cursor, PLL

ADV7160 (220 MHz)
ADV7162 (170 MHz)

PC GRAPHICS (NO RAM)

Triple

8-Bit

ADV101 (BT101 Pinout)
ADV7120 (30, 50, 80 MHz)

10-Bit

ADV7122 (30, 50, 80 MHz)
ADV7127 (125 MHz)
ADV7129 (360 MHz, w/Cursor/PLL)

V/F & F/V Converters

V/F and F/V CONVERTERS

AD537	(150 kHz, w/Sq Wave Output)
AD654	(500 kHz, w/Sq Wave Output)
ADVFC32	(500 kHz)
AD650	(1 MHz)

Synchronous

AD652	(2 MHz Clock)
AD7741	(5 MHz Clock)
AD7742	(5 MHz Clock, Bipolar Input)

Power Meter

See Power Management Section.